CARRIERS AT WAR 1941-AT WAR 1945

FLEET CARRIER OPERATIONS IN THE PACIFIC

DESIGN MANUAL

Table of Contents

1.	INTRODUCTION	2	Scenario Length 8	
2.	USING THE DESIGN MENUS	2	Scenario Names 8	
3.	EDITING THE DESIGN MENUS	2	Task Group Creation 8	
4.	VARYING AN HISTORICAL SCENARIO	2	8. COOPERATING WITH THE	
5.	CONTINUE AND CONTINUE CONTINUES	2	COMPUTER.	9
6.		-	9. ACKNOWLEDGEMENTS	10
	SCENARIO	2	APPENDIX A	11
7.	THE DESIGN HANDBOOK	3	The 'Raid on Ceylon' Scenario	11
	Plane Class Creation 3		APPENDIX B	16
	Squadron Creation 4			10
	Base Creation 5		Blank Design Forms	20
	Ship Class Creation 5		APPENDIX C	20
	Carrier Creation 6		Principal Naval Radar Systems in Use	
	Other Ship Creation 6		in the Second World War	
	Map Creation 6		APPENDIX D	21
	Weather Creation 7		Japanese, American and Common-	
	The Print Utility 7		wealth Aircraft of the Pacific War	
	The Review Utility 7		BIBLIOGRAPHY	23
	Scenario Briefing 7		DESIGN KIT MENU DISPLAY	24

Strategic Studies Group Pty Limited



1. INTRODUCTION

The information in this booklet is, hopefully, presented in a sensible order and if you go through it sequentially it will provide you with enough experience to generate a scenario of your own. It is important that you have at least run through the Introductory Tutorial before attempting to use the routines described here.

Quite a lot of thought has been given to selecting the variables in the game and their inter-relationships. It may seem initially that we've gone overboard in the number of separate items we have included. What we have found, and in a sense learned, in the course of 'CAW's extended development, is the importance of avoiding subjective analysis, at least where a more objective approach is possible. Not only does this make the inter-relationships between the contending forces much simpler to assess, but it provides a sound platform on which to build the computer's artificial intelligence. And this last point is especially important in a game system where parameter control is given over to the players. The computer's intelligence is, of course, not infallible as the notes in the Section 'Cooperating with the Computer' attest. What is significant is that the computer's decision making is not dependent upon a pre-programmed analysis of a particular situation.

2. USING THE DESIGN MENUS

Examine the back page of this booklet. It is a schematic display of all the Design Menus. In essense they operate just as do the Start and Game Menus you are already familiar with.

Boot your disk and select Menu J from the Start Menus. This is the Master Menu from which all the Design Menus depend.

3. EDITING THE DESIGN MENUS

The Design Menus fall into four main categories. These are-

- (a) Branch Menus. {Nos 3,6,7}. No editing of these menus is possible. They signpost the route to other menus or functions.
- **(b)** Direct Function Menus. {Nos 2,4,5}. These menus perform a single function upon being selected.
- (c) Direct Edit Menus. {Nos 1,9,10,11,12,13,14}. These menus are used for editing a 'once only' routine. The Design Handbook explains their use individually.
- (d) Create Menus. {Nos 8,15,16,17,18,19,20}. The general procedure for editing a Create Menu is explained below.
- NUM-This is the number you have allocated to that element.
- CLEAR This will clear the display screen if anything is there.
- LIST This will give you a look at all the elements of this type you have created so far.
- LOAD This will load into the creation screen whatever data {if any} has already been assigned to that particular <NUM>.
- EDIT This will throw the cursor into the display screen. Use (RET) to cycle through the values, entering data as appropriate. The up arrow key will move the cursor in the opposite direction. Type (ESC) to recover the menu window from the display screen.
- SAVE Select this when you are satisfied with the data you have created.

4. VARYING AN HISTORICAL SCENARIO

Very often the smallest alteration to the data in an historical scenario is enough to create an entirely new battle. Even the simple knowledge that a variation may have been made is enough to create the uncertainty so necessary to get the proper 'feel' for those Pacific carrier battles.

We suggest that before attempting to modify the historical scenarios, you create the 'Raid on Ceylon' scenario, as explained in a following Section. The experience this will give you in using the Design menus is more than worth the effort.

The notes accompanying each historical scenario suggest several variations (historical might-have-beens) to the Orders of Battle. For example, ships and/or squadrons can be added or deleted, crew and/or ordnance performance can be modified... indeed, every variable in the data base can be altered. And these variations are most exciting and enjoyable when you can get a 'neutral' party to secretly select them.

5. CREATING AN ORIGINAL SCENARIO

There is, as you will shortly see, an immense amount of information which needs to be researched and collated before you can realistically attempt to develop an historical scenario. Rather than spend several pages listing all the relevant material you will need to have available, we decided to present to you a complete scenario in tabulated form and complement it with Appendices and an extensive bibliography. Furthermore, Appendix B is made up of a series of blank creation sheets which are suitable for photocopying prior to use in scenario design.

Before trying to do anything else with the Design Menus, we suggest you build up the complete 'Raid on Ceylon' scenario. In addition to creating a rewarding and quite exciting scenario, you'll have mastered the creation routines and gained some insight into our design evaluations and prejudices. Appendix A includes all the tabulated information necessary to construct the 'Raid on Ceylon' scenario. Have a brief look through it, then follow the creation sequence explained below. It is advisable, though not essential, to consult the Design Handbook while entering data for Menus 8-11 and 15-20.

6. CREATING THE 'RAID ON CEYLON' SCENARIO

1. Boot the master side of your 'CAW' disk, select the 'CREATE' line from Menu A and type (Y)(RET) to obtain the scenario menu. You may select any of these scenarios to provide the skeleton on which the 'Raid on Ceylon' game is built. For example, select the 'PEARL' line and type (Y)(RET) to obtain Menu J. Examine the Design menus presented on the back cover of this Design Manual.

Select the <CLEAR> line from Menu J and type (Y)(RET) to obtain Menu 2. Clear both map and data. Type (ESC) to recover Menu J.

Select the 'DISK' line from Menu J and type (Y)(RET) to obtain Menu 1. Use the 'INIT' line to initiallize a blank disk. Select the 'EDIT' line and type (Y)(RET) to enter the Save Game display. Select the 'SAVE' line in the first save location and type (Y)(RET). The cursor will jump to the 'Comment' line. Type (Raid on Ceylon)(RET). The design skeleton is saved to disk, the cursor returns to the menu window and you are informed that 'Raid on Ceylon' is a 'Creation file'. Type (ESC) to recover Menu J and you are ready to begin entering data.

2. Select Menu 3. It is more convenient to construct the map first. Select Menu 6 then Menu 12. This is the Map Create Utility. The strategic screen will appear completely blank on B&W monitors, blue on colour monitors. Examine the draft map provided in Appendix A. To get you started, the following key strokes will create the island of Ceylon.

Position the strategic cursor over hex block {7,12}, then recover the tactical cursor. It is poised over hex {22,37} as indicated above the Menu Display. Away we go! Type (T4)(2)(T4)(2)(T4) (4)(T4)(3)(T4)(4)(T6) {the China Bay airstrip at Trincomalee} (3)(T4)(4)(T4)(4)(T4)(4)(T4)(3)(T4)(4)(T4)(4)(T4)(5)(T4)(4) $(T4)(5)(T4)(5)(T6)\{Koggala\}(5)(T4)(6)(T4)(1)(T4)(6)(T4)(1)$ (T6) {Racecourse and Ratmalana airbases at Colombo} (6) (T4) (1)(T4)(2)(T4)(1)(T4)(1)(T4)(1)(T4)(2)(T4)(1)(T4) and you have created the coastline of Ceylon. Map every hex of the interior with (T4). To put in the mountain ridges, position the tactical cursor in hex {24,42} and type (S3)(4)(S1)(5)(S2)(S3) (4) (S1) (S2) (5) (4) (S2) (3) (S1) (1) (S3) (3) (S1) (1) (S1) (S2) (S3) (3)(S1)(1)(S2)(S3). To correct an improperly built hex, simply type over it with the correct value. Use (S0) to erase all hex-sides from a particular hex, then re-enter the correct value. Note that you can type (0) to centre the screen on the cursor.

Once you have built the entire map, recover Menu J and use the 'DISK' line to save the information to disk. This will safeguard you against an accident. The only thing worse than building up a complete map from scratch is having to do it twice.

3. On to the Weather. Recover Menu 6, then select Menu 13. The Strategic Map is displayed with the strategic cursor in the centre of the screen. Examine the Weather Pattern presented in Appendix A. The island of Sumatra in the south-eastern portion of the map is pretty well covered by squalls and low clouds. Use the I, J, K, M keys to position the strategic cursor in hex-block $\{23,14\}$. The following keystrokes will create the weather front. Type (2)(1)(2)(K)(2)(M)(3)(M)(3)(M)(2)(M)(2)(K)(2)(1)(2)(1)(2)(K)(3)(M)(3)(M)(2)(M)(2)(K)(2)(1)(2)(1)(3). Complete the remaining Weather Pattern and select the <math>OISK> line from Menu J to safeguard it on disk. Select Menu 14. The sector forecast display is presented. Enter the data from the Weather Pattern onto the display; i.e. for Sector 1 type (3)(3)(0).

4. Recover Menu 3, then select Menu 7. The bulk of the game's information is entered via this menu. The inter-relationships between the various data bases displayed in Menu 7 are such that it is most convenient to enter them in the following order.

4(a). Plane Class {P TYPE}. Select Menu 17. Locate the tabulated Plane Class data in Appendix A and use the procedure explained earlier in these notes for editing the menu. For example, to enter the data corresponding to the Hurricane fighter, check that the <NUM> line in the menu window is 1. Type (RET) until you have positioned the cursor on the (EDIT) line, then type (Y)(RET) to enter the creation routine. Complete the schedule by typing- (Hur 2)(RET) (0)(RET) (0)(RET) (1)(RET)(3)(RET)(5)(RET),(3)(RET)(3)(RET)(2)(RET)(9)(RET) (4)(RET)(4)(RET)(3)(RET)(5)(RET),(3)(RET)(Y)(RET)(Y)(RET) (N)(RET) (N)(RET) (N)(RET). Recover the menu, select the <SAVE> line, type (Y)(RET) and cycle around to the <NUM> line. Enter (2), use (CLEAR) to get a clean sheet then edit the next plane in Appendix A. Complete all 15 Plane Classes, use LIST to make sure they're all there, then save the data to disk. Should you make an incorrect entry, type (SPACE) if the cursor is on the incorrect entry or cycle through the display and re-enter the value if otherwise. Note also that the 'UP ARROW' key will move the cursor in the opposite direction.

4(b). Squadrons {SQUADS}. Select Menu 16. Locate the Squadron data in Appendix A. Enter the data for the 53 squadrons in the scenario. Save to disk.

4(c). Airbases {BASES}. Select Menu 15. Locate the Base data in Appendix A. Note the one small difference between this menu and the others dependent on Menu 9. Prior to using <code>EDIT</code>, use the <code>MAP</code> line to recover the Strategic Map. Locate the appropriate airbase with the I, J, K, M keys, recover the Tactical Map and position the tactical cursor directly over the airbase. Type (RET). The Base Creation routine is recovered and the map location of the base is entered in the correct position. Note that this procedure is optional and the MAP LOC may be entered directly from the draft map or data sheet. Enter the data for the 7 bases in the scenario. Save to disk.

4(d). Ship Class {S TYPE}. Select Menu 20. Locate the Ship Class data in Appendix A. Enter all 43 classes, then save to disk.

4(e). Carriers. {CARR}. Select Menu 18. Locate the Carrier data in Appendix A. Enter the 9 flat-tops, then save to disk.

4(f). Other Ships. {SHIPS}. Select Menu 19. Locate the Other Ship data in Appendix A. Note that the data entry for submarines is slightly different to that for surface ships. Consult the Design Handbook for the method of deploying submarines. Enter the 99 ships, then save to disk.

5. Now to organising the Task Groups. Recover Menu 3 and select Menu 8. Note there are no LOAD or SAVE functions in this routine. Both occur automatically. Locate the Task Group data in Appendix A. Set the 'ALLY' line to Y and the 'NUM' line to 1, then edit the display using the procedure described in the Design Handbook. There are 7 Japanese Task Groups and 16 Allied Task Groups. Remember to set the 'ALLY' line to N when editing Japanese Task Groups.

6. Almost Finished! The Briefing 'BRIEF' Length 'TIME' and name 'NAME' routines are all that remain to be completed. Locate the data from Appendix A. Use Menus 9,10,11 to enter the information. The information necessary to complete Menu 11 is given below. [AXIS: Land (0) - 5th AIR XX, Naval (0) - Nagumo, Naval (1) - Ozawa. ALLIED: Land (0) - Layton, Naval (0) - Somerville, Naval (1) - 'Colombo', Naval (2) - 'Trinco', Naval (3) - 'Transport'.] That's it. The scenario is ready for play.

7. THE DESIGN HANDBOOK

The following Section is both an explanation of, and a guide to, the proper use of the Creation and Edit Menus.

Plane Class Creation (Menu 17)

This routine is used to define the characteristics and performance of the various aircraft employed in the scenario. Examine <u>Appendix A</u> for a completed example. To enter the correct value for each characteristic, follow the guide below. A maximum of 63 aircraft types may be created per scenario.

TYPE - Enter any five letter word which will distinguish the aircraft(e.g. SBD-3, BETTY, G4M1 etc).

ROLE - Enter the combat role for which the aircraft was primarily designed; viz-fighter=0, bomber=1, recon=2.

RANGE - Enter the endurance of the aircraft at each of normal, extended and transfer ranges. Endurance is measured in hours aloft at the aircraft's rated cruising speed. Table 1 illustrates the relationship between endurance and mission capability.

ALTITUDE - Enter the combat performance of the aircraft at high $\{>25,000 \text{ ft}\}$, medium $\{10,001-25,000 \text{ ft}\}$ and low $\{<10,000 \text{ ft}\}$ altitudes from the data presented in <u>Table 2</u>.

Table 1

FIGHTER BOMBER RECON

NORMAL RANGE

EXTENDED RANGE

TRANSFER RANGE

STRIKE
(FULL PAYLOAD)
(TORPEDO)

C A P
ESCORT
STRAFE
SEARCH

UNARMED TRANSFER

Table 2

SERVICE CEILING (ft)	ALTT	TUDE RA	ATING
SERVICE CEILING (It)	HIGH	MED	LOW*
> 35,000	3	3	3
30,001 - 35,000	2	3	3
25,001 - 30,000	. 1	3	3
20,001 - 25,000	0	3	3
15,001 - 20,000	0	2	3
10,001 - 15,000	0	1	3
5,001 - 10,000	0	0	3
₹5,000	0	0	2

^{*} If maximum speed is achieved at an altitude greater than 18,000 ft, reduce LOW rating to 2. If maximum speed is achieved at an altitude greater than 25,000 ft, reduce LOW rating to 1.

CRUISING SPEED - This characteristic is measured in hexes traversed per hour. Each hexagon on the map represents 20 nautical miles from side to side. Thus a cruising speed of 120 knots equals 6 for this purpose. The maximum value which can be entered is 15 {300 knots}. Round off any fraction to the nearest number.

BOMB LOAD - This characteristic is measured in increments of 300 lb of bombs. A payload of 10,000 lb of bombs equals 34 for this purpose. The maximum value which can be entered is 63 {19,000 lb}. Round up any fraction.

FIREPOWER – This value measures the quality and quantity of the aircraft's guns. Generally, 1 point is awarded for every 1 fixed forward gun and/or 1 point for every 2-4 flexible guns. The value obtained is modified {+ or - 1} by the suitability of the aircraft as a firing platform and/or the type of mounting provided for the flexible guns. The final value is somewhat subjective however, and a glance at Appendix D {Specifications for US, Japanese and Commonwealth Aircraft in the Pacific War} will provide the necessary familiarity to start work on your own design. The maximum value is 7. Unarmed planes have a value of 0.

VULNERABILITY – This value measures the protection afforded to the crew, the fuel tanks and other vital equipment. A glance at $\underbrace{Appendix\ D}_{}$ will again provide the necessary familiarity to start work. The maximum value is 7. The minimum value is 0.

MANOEUVERABILITY – This value measures the aircraft's agility primarily through the evaluation of wing loading; i.e. in general, the lower the wing loading then the more manoeuverable will the aircraft be. Pilot reports, where available, are also a useful source of information. See Appendix D. The maximum value is 7. The minimum value is 0.

 $\begin{array}{l} \textbf{POWER} - \textbf{This value measures the aircraft's maximum speed.} \\ \textbf{Consult} \, \underline{\textbf{Table 3}} \, \textbf{for the correct value.} \end{array}$

Table 3

Table 4

MAXIMUM SPEED (Knots)	POWER RATING	STR
¢ 210	0	0
210 - 240	1	1
241 - 270	2	2
271 - 300	3	3
301 - 330	4	4
331 - 360	5	5
361 - 390	6	6
→ 390	7	7

	STRIP NO.	RUNWAY	SQUAD CAP
	0	Water	1
	1	Dirt	1
	2	Dirt	2
	3	All Weath	2
	4	All Weath	3
	5	All Weath	4
	6	Sealed	3
No.	7	Sealed	4

ALLIED - Yes or No.

CARRIER - Is the aircraft capable of taking-off from a carrier? Yes or No.

SEAPLANE – Yes or No. Amphibians have a crew value of 3-5; floatplanes have a crew value of 0-2.

TORPEDO - Is the aircraft designed to carry a torpedo? Yes or No.

NIGHT-Is the aircraft modified to operate at night? Yes or No.

ANTI-SUB – Is the aircraft modified to carry anti-submarine ordnance? Yes or No. If Yes, then the bomb load value must be set at 0.

Squadron Creation (Menu 16)

This routine is used to assign the aircraft types created in the previous routine to their historical organizations. Examine Appendix A for a completed example. Up to 126 individual squadrons may be created, each one of which may accommodate from 1–63 aircraft. All aircraft in a particular squadron must be of the same type. To enter the correct value for each characteristic, follow the guide below.

PLANE TYPE - Enter the <NUM> corresponding to the <P TYPE> created in the previous routine.

NUM PLANES – Total number of planes to be allocated to the squadron.

FATIGUE - This value measures the physical condition of the squadron's combat and ground personnel. 7=bright-eyed and bushy-tailed; 0=totally exhausted.

EXPERIENCE - This value measures the combat experience of the squadron's aircrew. 3=elite, 2=experienced, 1=trained but without combat experience, 0=untrained.

ADMIN - This value measures the experience of the ground personnel as well as briefing and debriefing routines. 3-terrific, 2-good, 1-adequate, 0-hopeless.

RECON - Is the squadron trained for reconnaissance operations? Yes or No.

NIGHT OPS - Is the squadron trained for night operations? Yes or No.

CARRIER OPS - Is the squadron trained for carrier operations? Yes or No.

Base Creation (Menu 15)

This routine is used to establish airbases and ports. A total of 23 may be created in each scenario. Any number of bases may be located in the same hex. Examine <u>Appendix A</u> for a completed example. To enter the correct value for each characteristic, follow the guide below.

BASE-Name the base {up to a maximum of 11 letters}.

MAP LOC – Enter the X and Y map co-ordinates of the base. These can be found by selecting the MAP option on the Base Creation Menu and then using the I,J,K,M keys to position the cursor in the approximate position on the Strategic Map. Hit (RET) to recover the Tactical Map and use the I,J,K,M or 1-6 keys to locate the correct hex. Hit (RET) and the co-ordinates will be entered. Alternatively, you can manually enter the co-ordinates from a reference to your draft map.

ASSIGNED SQUADRON - Enter the $\langle NUM \rangle$'s of the squadrons which are to be assigned to this base. A maximum of 10 squadrons may be assigned to each base.

DAM STAT – This value measures the degree of damage sustained by the base. 15=undamaged, 0=completely destroyed. Generally, bases will begin a scenario in an undamaged state; i.e. the value is 15. To provide for those circumstances where a base begins a scenario in a damaged condition, you may enter any value below 15.

AIRSTRIP - This value defines the runway surface and the operational capacity of the base. Consult <u>Table 4</u> for the appropriate value.

RADAR – This value defines the radar search pattern in terms of a hex radius from the base. The air and surface components are treated separately. Consult $\underline{\text{Table 5}}$ for the appropriate value. $\underline{\text{Appendix C}}$ lists most of the radar systems used in the Pacific War together with their performance converted into game terms.

ACCURACY - This value measures anti-aircraft fire control. 0=poor,1=fair,2=good,3=excellent {3 is only possible with radar directed fire control}.

DAM CONT - This value measures the base personnel's experience and effectiveness in combating enemy inflicted damage. 0=poor, 1=fair, 2=good, 3=excellent.

THEATRE - Up to 2 land based commands can be created per scenario. These commands are essentially independent from each other {as well as from the various Task Force commands} and are especially useful for simulating the lack of co-operation between the IJN and the JAAF, to say nothing of the similar situation between 5th Air Force {MacArthur} and 13th Air Force {Nimitz}. 0=theatre 0, 1=theatre 1.

HEAVY AA - This value measures the number of large calibre anti-aircraft weapons deployed for the protection of the base. In general, score 1 point for each 4"-5" AA or DP (dual purpose) gun and/or two 3" AA or DP guns. The maximum value is 31. The minimum value is 0.

LIGHT AA – This value measures the number of small calibre AA weapons deployed to protect the base. For every four tubes with a calibre greater than 30mm, score 1 point. For every eight tubes with a calibre less than 30mm, score 1 point. The maximum value is 31. The minimum value is 0. Round up any fractions.

SPOT NUMBER - This value defines the number of aircraft which can fit on the runway at any one time. It is a measure of the optimum strike size. Each point of this value represents four aircraft. The maximum value is 31. The minimum value is 0.

SEARCH PATTERN - Each base can be assigned a standing search along any or all of the eight bearings displayed on the compass rose. Type (Y) for each bearing you wish included in your standing search.

ALLIED - Yes or No.

FIGHTER - Are facilities present for arming fighters and light bombers {i.e. those with a crew rating 0-2}? Yes or No.

BOMBER - Are facilities present for arming heavy bombers {crewrating>2}? Yes or No.

PORT FAC - Are port facilities present? Yes or No.

Ship Class Creation (Menu 20)

This routine is used to define the classes to which the various warships in the scenario will be assigned. 63 classes may be designed for each scenario. Examine <u>Appendix A</u> for a completed example. Characteristics common to a group of warships are established here; variable characteristics are handled on a ship or carrier basis.

CLASS - This value describes the type of ship and the year in which the first vessel of the class was launched; e.g. CV 1935, AO 1921, CVL1934, DD1936B. A maximum of 8 letters can be used.

ALLIED - Yes or No.

SEAPLANE - Is the class capable of carrying seaplanes? Yes or No.

SHIP TYPE - 0= carrier or seaplane tender, 1= capital ship, 2= minor ship, 3= submarine, 4= auxilary vessel.

MAXIMUM SPEED - This value is measured in knots. The maximum value is 45.

DISPLACEMENT - This value is measured in multiples of 2,500 gross tons; e.g. the *Yamato* {72,000 tons} has a value of 29. The maximum value is 31. Vessels under 1250 tons have a value of 0. Round off fractions to the nearest number.

 $\mbox{\sc HEAVY}$ $\mbox{\sc AA}$ – This value is calculated in the manner described in the Base Creation routine.

 ${\bf LIGHT\,AA}$ – This value is calculated in the manner described in the Base Creation routine.

Table 5

SEARCH RADAR DISTANCE RATING SURF AIR 0 0 0 1 1 0 1 2 1 1 2 3 3 1 4 1 4 5 2 4 6 2 5 7

Table 6

Tani	CO	
SUB. RATING	SUB. DEPTH (ft)	SUB. SPEED (kt)
0	· 100	٠6
1	100 - 150	6
2	151 - 200	7
3	201 - 250	8
4	251 - 300	9
5	301 - 350	10
6	351 - 400	11
7	→ 400	→ 11

ARMOUR – This value measures the thickness of any belt armour protecting the vessel. The units are inches. The maximum value is 15. Vessels without armour protection possess a value of 0.

PRIMARY GUNS - This value totals the number of tubes with a calibre equal to or greater than 8". The maximum value is 15. Vessels without guns of this calibre possess a value of 0. {Note that the effectiveness of the primary battery is determined by the vessel's displacement.}

SECONDARY GUNS – This value defines the number of 3''-6'' calibre guns aboard the vessel. Count LA and DP weapons for this purpose; ignore AA weapons. Award 1 point for each 6'' gun, each two 4''-5'' guns and/or three 3'' guns. The maximum value is 15. Vessels without a secondary battery possess a value of 0. Round up any fractions.

TORPEDO TUBES - This value defines the number of torpedo tubes mounted. The maximum number is 15. Vessels without torpedo tubes have a value of 0.

VULNERABILITY - This value is a somewhat subjective assessment of the vessel's overall integrity. Ships with vulnerable areas, old ships and ships with structural weaknesses should be given low values; carriers in particular are subject to low values, generally in the range 0-2. The maximum value is 7. The minimum value is 0.

ANTI-SUBMARINE – This value measures the quality and quantity of active ASW weapons carried. Award 1 point for every two depth charge throwers, each hedgehog and each multiple of 15 depth charges. If any active ASW weapons are carried, the minimum value is 1. The maximum value is 7. The minimum value is 0.

TORPEDO LOADS - This value measures the number of torpedoes carried, expressed as a multiple of the Torpedo Tubes value. Vessels without torpedo tubes have a value of 0. The maximum value is 3. Round off any fractions to the nearest value.

Carrier Creation (Menu 18)

This routine is used to define the characteristics and performance of the aircraft carriers and seaplane tenders employed in the scenario. Examine <u>Appendix A</u> for a completed example. A maximum of 31 vessels may be created. There is no minimum number.

CARRIER - Use this location to name the carrier or seaplane tender. A maximum of 11 letters can be used.

AIR CAPACITY – This value determines the maximum number of aircraft which can be assigned to the vessel. It also measures the operational limit of the vessel during the scenario. The maximum value is 127. It is important to check that the correct value is not exceeded; i.e. sum the planes in the squadron as a cross reference.

SHIP CLASS - Enter the number corresponding to the vessel's Ship Class from the previous routine.

TASK GROUP – Enter the value corresponding to the task group to which the vessel has been {or will be} assigned. For further details, consult the Task Group Creation routine.

SPOT NUMBER - This value defines the number of aircraft which can fit onto the flight deck at any one time. It is a measure of the optimum strike size, or 'deckload strike' as it is sometimes termed. Each point of this value represents four aircraft. The maximum value is 31.

RADAR - This value is calculated in the manner described in the Base Creation routine.

ACCURACY - This value is calculated in the manner described in the Base Creation routine.

DAMAGE CONTROL - This value is calculated in the manner described in the Base Creation routine.

DAMAGE STATUS - This value is calculated in the manner described in the Base Creation routine.

Other Ship Creation (Menu 19)

This routine defines the characteristics and performance of the remaining ships employed in the scenario. Examine Appendix A for a completed example. A maximum of 215 vessels may be created. There is no minimum number.

PENNANT - Enter the pennant number of the vessel to be defined. For example, the *USS North Carolina* has the pennant number BB55. A maximum of five letters can be used.

SHIP CLASS - This value is entered from reference to the Ship Class Creation routine.

DAMAGE CONTROL - This value is calculated in the manner described in the Base Creation routine.

 $DAMAGE\ STATUS$ – This value is calculated in the manner described in the Base Creation routine.

 \mbox{RADAR} – This value is calculated in the manner described in the Base Creation routine.

ACCURACY - This value is calculated in the manner described in the Base Creation routine.

CARGO - This value measures the vessel's capacity to carry supplies and/or troops. In general, the maximum capacity for transports is twice their displacement value. Small warships such as destroyers have a capacity of 2; APD's as much as 4.

TASK GROUP - Enter the value corresponding to the Task group to which the vessel has been {or will be} assigned. For further details, consult the Task Group Creation routine. Note that it is not possible to assign a submarine to a Task Group.

ASSIGN PATROL – This entry can only be made for submarines. To allocate a patrol area to the submarine, type (Y) and you will recover the Strategic Map display. Position the strategic cursor over the hex-block containing the hex location you have chosen for deployment, then type (RET). The Tactical Map is now displayed. Locate the hex chosen as the centre of the submarine's patrol area and hit (RET) again. The allocation is complete and you will recover the creation screen. Note that ships other than submarines will not be able to access this location.

SUB DEPTH – This value measures a submarine's operational diving limit. Consult <u>Table 6</u> for the correct value. Ships other than submarines will not have access to this location.

SUB SPEED - This value measures a submarines maximum submerged speed. Consult <u>Table 6</u> for the correct value. Again, only submarines have access to this location.

SEAPLANE SQUADRON – Enter the $\langle NUM \rangle$ of the Seaplane Squadron which is to be assigned to this vessel. The maximum is 1 squadron.

Map Creation (Menu 12)

Select Menu 12 to enter the Map Creation routine. The Strategic Map is displayed together with the hollow cursor.

Each element of terrain on the Strategic Map represents a block of 9 hexes on the Tactical Map. Each hexagon is 20 nautical miles from side to side for a total of 6048 hexes or just under 3.2 million square miles. Examine the Data Cards.

The X,Y coordinates for both the hex block and individual hex are displayed above the menu window. To edit a particular hex or hex-side, first position the strategic cursor over the

appropriate hex block using the I,J,K,M keys. Type (RET) to recover the Tactical map, then position the tactical cursor over the chosen hex using either the I,J,K,M keys or the 1-6 keys. Note that you may type (0) to centre the screen on the tactical cursor.

There are 6 hex types and 4 hex-side types.

NAVIGABLE OCEAN HEX (T0) - This is the default value. It need only be used when correcting a wrongly edited hex.

PROHIBITED OCEAN HEX (T1) - These hexes are off-limits to all ships. In reality, they are an artifice to prevent the computer from becoming stuck in severely congested waters. The Section on 'Cooperating with the Computer' explains their use. Such ocean hexes appear purple on the Tactical Map. They are not visually distinguishable on B&W monitors. There are about 10 of them on the Solomons map, none on the Midway or Marianas maps.

SHOAL/ATOLL HEX (T2) - These hexes represent shallow water, reefs and small islands. They are navigatable for all ships, including submarines.

LAND HEX (T3,T4) - Two types of land hexes may be created; clear (T3) and jungle (T4). The effect on the play of the game is the same whichever type {or combination of them} you elect to use. For aesthetic reasons, we've chosen T4 for all land hexes. Obviously, land hexes are off-limits to all ships.

AXIS BASE HEX (T5) - This symbol identifies an Axis airbase. Port facilities may or may not be present, depending upon the entry made in Menu 17. Ports may be entered by friendly naval forces.

ALLIED BASE HEX (T6) - This symbol identifies an Allied airbase.

Hex-sides are defined somewhat differently to hexes. (S1)-(S3) will build north, north-eastern and south-eastern hex-sides respectively. Note that the south hex-side of one hex is the north hex-side of the hex directly below it. (S0) will clear all hex-sides from a particular hex. The hexes adjacent to the hex-side being created will determine its type. Thus, a hex-side created between two ocean or shoal hexes is an impassable reef {white}. A hex-side created between any type of land or base hex and an ocean or shoal hex is a coastal hex-side {blue} and is automatically entered by the computer. Finally, the hex-side created between two land or base hexes is a mountain ridge {brown}.

Note that the terrain elements on the Strategic Map are built up as a consequence of the topography of the Tactical Map. The priority given to the strategic display is base, land, shoal, ocean.

Weather Creation (Menus 13 and 14)

There are 2 components involved in creating a weather pattern – the weather report and the weather forecast. Examine $\underline{Appendix}\,\underline{A}$ for a completed example.

(i). The Weather Report {Menu 13} - This routine is used to position the weather elements in their starting locations. The three types of elements available are high clouds, low clouds and squalls. Weather elements are positioned in hex blocks, not hexes. In fact, the prevailing weather in a hex block is an indication of the most likely weather condition for a particular hex. Use the I,J,K,M keys to position the strategic cursor over the chosen hex-block and enter (1) {high cloud}, (2) {low cloud} or (3) {squall}. The default value is (0).

(ii). The Weather Forecast {Menu 14} – This routine is used to determine the prevailing winds and current weather activity. The long-term weather forecast is defined in the Scenario Length routine {Menu 10}. Select Menu 14 to obtain the Forecast Display Screen. The Strategic Map is divided into 12 sectors. For each sector, 3 parameters must be set. Examine Appendix A for

a completed example. The Weather Condition can be any one of the following; 0= clearing, 1= stable; 2= building up, 3= unstable or flukey. The Wind Direction can be from N(1) ,NE(2) ,E(3), SE(4), S(5), SW(6), W(7), NW(0). Wind speed is determined by prevailing weather conditions and is not entered in the creation routines. The final value in each group measures wind reliability; i.e. 0= wind direction unlikely to vary, 1= variable wind direction expected throughout the day.

During the course of the game, the weather pattern is updated approximately once per hour. To get some idea of how your newly created weather pattern will develop throughout the course of the scenario, recover Menu 13 and type (RET) at 2-3 second intervals. You will notice that in addition to the above, cloud formations are more likely to form over land masses and more likely to break up over bodies of water.

The Print Utility (Menu 5)

This utility is used to obtain a hard copy of the information entered in Menus 17-22. Select Menu 10. Make sure your printer is properly connected, then select the data base of your choice. Each item in that data base will be printed sequentially.

The Review Utility (Menu 4)

This utility is used to quickly review the information presented in Menus 17–22. Select Menu 11. Select the data base of your choice. Type (SPACE) to sequentially view each item in the data base.

Scenario Briefing (Menu 9)

This routine is used to establish national characteristics and ordnance performance and to specify the locations of coastwatchers and anchor points for seaplane tenders. Examine Appendix A for a completed example.

MORALE – This value is an assessment of the national fighting spirit. 0= cautious, 1= normal, 2= resolute, 3= fanatic. It has an important influence on the resilience and determination the troops will display.

ASW TECH – This value measures the quality of the passive submarine detection technology available to each side. Consult <u>Table 7</u> for the appropriate rating. The range is 0–3.

RADAR TECH - This value measures the quality of the radar equipment and the competancy of its operators. Consult <u>Table 7</u> for the appropriate rating. The range is 0-3.

Table 7

	YEAR	RADAR	ASW	FIRE	TORPED	O PERF	DRMANCE
	ILMR	TECH.	TECH.	CONTROL	AERIAL	SURFACE	SUBHARINE
COMMONWEALTH	1939-1940	1	1	1	2	2	2
	1941-1942	2	2	2	2	2	. 2
	1943-1945	3	2	2	2	2	3
UNITED STATES	1939-1941	0	1	1	1	.2	0
	1942-1943	2	1	1	2	2	0
	1944-1945	3	3	3	2	2	3
JAPAN	1939-1942	0	0	2	3	3	3
	1943-1945	0	1	2	3	3	3
GERMANY	1939-1941	1	1	1	1	2	3
	1942-1945	2	2	2	2	2	3
ITALY	1939-1945	1	1	1	1	2	2
SOVIET UNION	1939-1943	0	0	1	-	1	1
	1944-1945	1	1	1		1	2

FIRE CONTROL - This value measures the accuracy of surface gunnery including the contribution, if any, made by the presence of radar controlled directors. Consult <u>Table 7</u> for the appropriate rating. The range is 0-3.

TORPEDOES {AERIAL, SURFACE, SUBMARINE} - This value measures the qualitative difference of the torpedoes available to each side. The three types of torpedoes are rated separately. Again, consult <u>Table 7</u> for the appropriate rating. The range for each is 0-3.

{GENERAL NOTE - For each of the preceding four characteristics, 0= hopeless, 1= inferior, 2= serviceable, 3= excellent.}

INVASION MULTIPLE – This value is used to assess the relative importance of successfully landing troops and supplies at their preset destination. Consult the Victory Schedule in the Rules Manual for a summary of points awarded during the game. Note that cargo landed at an enemy base is more valuable than cargo landed at a friendly location. 0= points multiplied by 1, 1= points multiplied by 2, etc.

ABORT DIRECTION - This heading is used to indicate the direction in which damaged ships or task groups under a 'flee' order will steam. It is the line of retreat. The usual compass rose procedure is followed; i.e. 0=N, 1=NE, etc.

SURPRISED - Yes or No. Surprise can be achieved only against an opponent who is not at war.

PARA-FRAG BOMBS - Are these weapons available? Yes or No.

CLEAR MAP POINTS - This must be done for every scenario, even those which will not use coastwatchers or anchor points.

COASTWATCHER {1-4} - For each coastwatcher hit (Y) to recover the Strategic Map, then use the procedure described for positioning submarines to locate them. Coastwatchers can only be deployed on land hexes.

ANCHOR POINT {1-2} - Anchor points are used by seaplane tenders as additional locations from which they can conduct air operations. For each anchor point, hit (Y) to recover the Strategic Map, then use the submarine deployment procedure to position them. Only shoals and ocean hexes adjacent to land hexes can be designated as anchor points.

Scenario Length (Menu 10)

This routine is used to establish the start and finish times for the scenario, the hours of dawn and dusk, and the long-range weather prediction. You will notice that the game can be set in any year from 1900 to 1955. Aircraft performance and ordnance has changed so much since the latter date that the parameters used in the game are no longer valid. Examine Appendix A for a completed example.

HOUR {START} - Using the 24 hour clock, determine the start hour of the scenario; 7pm is 1900 hrs. Midnight is 0000 hrs. Only the first two digits of the hour can be entered.

DAY (START) - Select the appropriate number from 1-31.

MONTH - Select the appropriate number from 1-12.

YEAR - Select the appropriate number from 0-55; i.e. 1900-1955.

DAWN - Determine the hour of daybreak. Enter a number between 3 and 10; i.e. it must be between 0300 and 1000 hrs.

DUSK - Select the hour of nightfall. Enter a number between 15 and 22; i.e. it must be between 1500 and 2200 hrs.

HOUR {FINISH} - Again using the 24 hour clock, select the end hour for the scenario.

DAY {FINISH} - This number measures the length of time the scenario will run for. A value of one indicates that the scenario will end on the day following its commencement. The range available is 1-9; i.e. the maximum scenario length is 10 days.

WEATHER FORECAST – This value is used to predict the probable change to the sector weather outlooks during the course of the scenario. 0= tendency to clearing, 1= tendency to maintain the status quo, 2= tendency to close in, 3= unpredictable.

Scenario Names (Menu 11)

This menu is optional and is intended for historical interest. Determine the names of the commanders of the Theatres and Naval Forces you have created and enter them in the appropriate locations.

Task Group Creation (Menu 8)

This routine is used to organize the carriers and ships already created into their various Task Groups and Task Forces. Examine Appendix A for a completed example. A maximum of 23 Task Groups can be assigned to each side for a total of 46. Prior to editing this routine, be sure you have set the ALLY line in the menu to (Y) if editing Allied Task Groups or (N) if editing Axis Task Groups.

FLAGSHIP - This entry is used to select the flagship for the Task Group. Use the arrow keys to cycle through the vessels allocated to the Task Group. They will be displayed in the box at the top of the screen, together with their ship type and the total number of vessels in the Task Group. Type (RET) once you have made your selection.

OBJECTIVE – Task Groups may have an objective assigned to them. It must be either a friendly or enemy land base. {Note that enemy Task Groups may only be assigned as an objective during the course of the game.} Enter 0 if no objective is to be assigned. Enter the value corresponding to the chosen land base if otherwise. Only Task Groups assigned Strike, Bombard, Refuel or Transport missions can be given an objective.

MISSION - There are 7 voluntary missions which can be given to Task Groups. Consult the Rules Manual for the definition and conditions of use for each. 0= strike, 1= support, 2= escort, 3= cover, 4= bombard, 5= transport, 6= refuel.

HEADING – Task Groups which have not been assigned an objective and which have strike or refuel missions must be given a directional heading. The standard compass rose pattern is used; i.e. 0= N, 1= NE etc.

ENDURANCE – This value determines the length of time the Task Group can remain at sea. It is measured in 'days steaming at 15 kts'. For example a Task Group with an endurance of 25 could steam around the map at 15kts for 25 days. Fuel consumption increases substantially at greater speeds; at 35 kts it is approximately 8 times as great. The maximum value is 31. The minimum value is 0. Note that Task Groups with an endurance of 5 or less will be reduced to a maximum speed of 10 knots until they have refueled. Task Groups with an endurance of 0 will be taken out of your control and returned to port. The refueling rules are explained in more detail in the Player's Manual.

TASK FORCE – All Task Groups must be assigned to one of four Task Forces; i.e. 0–3.

ADMIN – This value measures the degree of co-operation between the vessels within a Task Group. Ships accustomed to working together will have a rating of 1-3. Those new to each other's company or otherwise inexperienced will have a rating of 0.

REINFORCE – Task Groups which do not begin the scenario deployed on the map are reinforcements. They will arrive in their designated starting hex between 0000hrs and 0600 hrs on

their allocated day of arrival. Enter a day of arrival between 1-9. Task Groups not intended as reinforcements are given a value of 0.

TASK FORCE COMMAND – Yes or No. This indicates which Task Group within a Task Force contains the Fleet Flagship. It is, in fact, the residence of the player {human or otherwise} commanding that particular Task Force. The loss of the Fleet Flagship {or any flagship for that matter} will have a serious effect for the remainder of the scenario. The Task Group 'Admin' value is reduced to zero. Should a Task Force command group be wiped out, a new group will be selected to replace it.

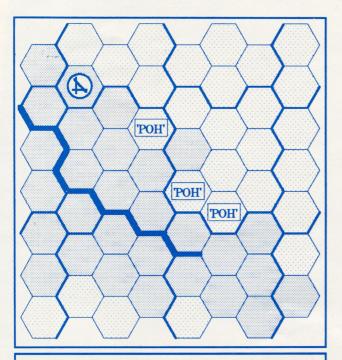
START AREA - To allocate a Start Area type (Y) to recover the Strategic Map, then use the procedure for deploying submarines to position the Task Group.

SEARCH PATTERN – Search bearings, if any, are entered in a manner identical to that used in the Base Creation routine.

8. COOPERATING WITH THE COMPUTER

The purpose of this section is to provide the information necessary to minimize the problems which may arise as you develop an original scenario. Our main concern is with the map. There are no hard and fast rules to follow, simply a few precautions.

(i) Prohibited Ocean Hexes. Any ocean hex which will border 4 or more land and/or base hexes should be designated a 'POH' unless there are 2 non-adjacent ocean hexes also adjacent to it. See the accompanying diagram for an example. In addition, it is often preferable to define a navigable passage through areas with extensive impassable reefs and/or land hexes. The Louisiade Archipelago in Battle Map B is one such example.



The above example shows three of the prohibited ocean hexes on the Coral Sea map.

(ii) The Centre Hex-Block. It is preferable, though not essential, to keep the centre hex-block {14,12} free of land hexes and reef hex-sides. Furthermore, large land masses are less likely to pose potential navigational hazards if they are more or less positioned around the edges of the map. Please note that, in general, land mass problems are most unlikely to occur while the ratio of land to ocean hexes is less than 1 to 3.

(iii) Start Times. It is advisable to begin a scenario between nightfall and 2300 hours. The reason for this is that the game begins with all aircraft in the dispersed station. To start a scenario during daylight would mean a period of several hours before a proper search pattern could be mounted. At midnight, computer controlled forces analyse the current situation and determine their strike plans for the following day. Note that the presence of enemy naval forces may alter these plans.

(iv) The Reason for the Battle. When designing a scenario {especially if it's hypothetical}, it is important to include a specific objective for at least one of the belligerents. The most suitable is an invasion site. Historically, as well as in this game, it is very difficult to force an outnumbered opponent to fight unless there is an additional consideration there to influence him.

(v) Plane Numbers and Squadron Size. Each squadron may contain a maximum of 63 aircraft. This fixes the absolute maximum for aircraft numbers to 7,938 since there are only 126 squadrons for allocation. However, the data base contains memory locations for only 1010 aircraft. In scenarios where this number is exceeded, the computer will organize aircraft into multiples of 2 to 8 depending upon the number of aircraft.

Of the six historical scenarios provided, only in the Battle of the Philippine Sea is the multiple other than one. Note that the number of aircraft listed for each squadron will be correct. It is only in the computer's handling of them that a difference

Our experience is the that multiples of 2 or 3 work just as well as single aircraft. Multiples of 6 to 8 are a bit peculiar, especially in regard to searching.

(vi) Task Group Organization. By now you have probably recognised that the organization of your Task Groups and Forces has a significant effect on their performance whether human or computer controlled. For example, cover missions can be particularly useful in screening more valuable ships from both surface and air forces.

The information presented here is a guide to the computer's naval strategy and planning. It's probably a good idea to read this section in conjunction with the naval operations notes in the Player's Manual.

Carrier groups are considered either offensive or defensive. The more carriers, the more likely the group will assume an aggressive role. The need to support an invasion is also likely to encourage a bold strategy. National morale is taken into account; fanatic forces may well show more guts than good sense.

Offensive carrier groups will tend to take the fight to you, defensive groups to manoeuver into a position to launch counter-attacks at embarrassing moments.

The mission given to a Task Force's command group is important. Carrier groups subordinate to a command group with a transport mission will be very reluctant to abandon their responsibility, no matter what the bait.

How you construct Task groups when designing a scenario is, of course, up to you. Please be aware that you may well find it necessary to experiment a little before coming up with the organization best suited to simulating the prevailing conditions.

(vii) Error checking. The creation routines are for the most part *not* self-checking. There was no room left on the disk for

that. Note that you can not enter illegal numbers, nor create more units than are allowed.

However, the computer can not stop you from starting a task group in the middle of the jungle so you will have to be a bit careful when entering data.

Any squadron not allocated to a carrier or base will be flagged prior to starting the game, giving you a chance to re-enter the creation routines and fix up the problem.

(viii) Balancing a Scenario. The computer takes no account of the equality, or otherwise, of the contending forces when allocating points for the destruction of ships and aircraft. Note that more points are conceded for the loss of aircraft with good crews than poor ones. Points awarded for the destruction of ships are based solely on ship characteristics. The invasion multiple variable in the Scenario Briefing Utility allows some flexibility in weighting the importance of amphibious operations.

In those scenarios where one side is up against hopeless odds, it becomes necessary to establish a points margin which the superior force must attain in order to earn a victory. Other conditions can also be attached to the victory criteria.

The Battle of the Philippine Sea scenario is a good example. Not only must the US forces achieve a substantial points superiority, they also can not afford to lose a single fleet carrier. Similarly with the Midway scenario. Here it is the Japanese who must overcome a considerable points handicap before they can earn a victory.

It can be very useful to allow the computer to 'test' a newly created scenario several times before deciding if any sort of handicap is necessary. If one is, it is also advisable to keep such information from other players who intend to use it. That's not to say you shouldn't give them some information. A short, written intelligence report giving a rough estimate of enemy strength is an excellent introduction to a new scenario. It is also the only way to reflect the decisive advantage the Allies enjoyed from the deciphering of the Japanese Naval Codes.

All of this brings to mind a small omission in the 'Raid on Ceylon' scenario. The overwhelming strength of the Japanese forces makes a points penalty essential. To do as well as they did historically, and to achieve a victory in this scenario, the IJN must have a margin of 175 points at the end of the scenario. Furthermore, the scenario becomes an automatic Allied victory if the Japanese lose more fleet carriers than their opponents.

(ix) Miscellaneous Matters. The design of ships and aircraft is left to your discretion. Be aware that the game's mechanics are designed for 'historically' or 'realistically' evaluated forces. The creation and use of 'fantasy forces' is certain to produce some curious results. Don't say we didn't warn you.

9. ACKNOWLEDGEMENTS

In addition to the acknowledgements listed on the album, there are several more people whose contribution has been of great assistance. Mark Watson, David Freer, Andrew Taubman and Gregor Whiley have found countless bugs between them, including such esoteric ones as the Port Moresby airbase sneeking inland in the middle of the night and the belt armour values being implemented the wrong way around so that destroyers became almost impossible to sink while the *Yamato* would go under at the drop of a hat.

Lisa Eugenides has been kind enough to proof read our manuscripts and offer many valuable suggestions. Ken Trout has given his slow-witted son much useful advice on typesetting, all of which, unfortunately, was not taken.

Our other Lisa, Apple's wondrous machine, has been invaluable. In fact, without it, the game would have been impossible to complete.

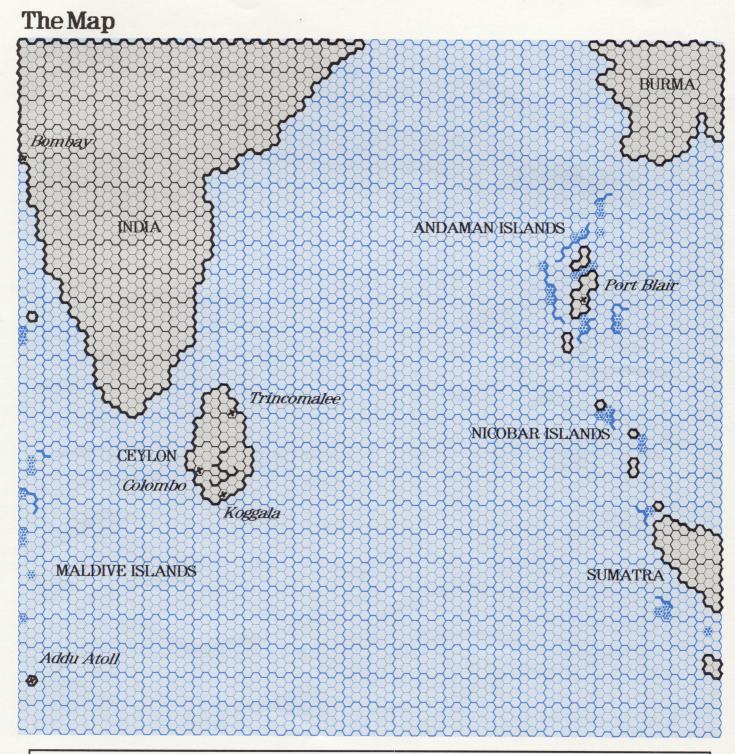
Finally, we would most especially like to thank Craig Taylor for his 'Flat Top' game. It's a bit aged now but nonetheless a splendid achievement. Without it, neither of us would have a clue where the Solomon's are.

Roger Keating Ian Trout

Sydney. October, 1984.



APPENDIX A The 'Raid on Ceylon' Scenario



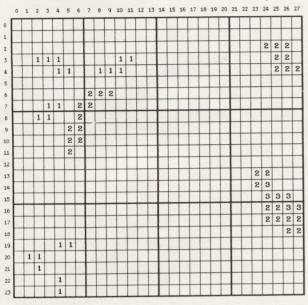
SCENARIO 7
Raid on Ceylon
3-8 April, 1942

CW BASES

Colombo (Ratmalana and Racecourse), Trincomalee (China Bay), Koggala, Addu Atoll, Bombay

IJN BASES - Port Blair

The Weather



1 High Cloud 2 Low Cloud 3 Squalls

MAP SECTOR	(12)	1	2	3	4	5	6	7	8	9	10	11	12
CONDITION	0-3	3	3	3	2	3	3	2	2	1	1	1	1
DIRECTION	0-7	3	3	4	4	6	6	1	1	6	6	7	7
RELIABILITY	0-1	0	0	0	0	1	1	1	1	0	0	0	0

Plane Classes

PLANE #	0-63		1			2			3			4			5			6			7			8			9			10	
TYPE	(5)	Н	ır	2	FL	11 :	1	8	ler	1	PE	3Y-	4	A	1ba	à	F4	F-	3	SA	M	1	1	VAL		J	AKE			AVI:	S
ROLE	0-2		0			0			1			2			1			0			1		L	1			2		_	2	
CREW	0-5		0			1			2			4	1		2			0			2		L	1			2		_	5	_
RANGE (N,E,T)	0-31	1	3	5	3	3	4	5	7			19	24	4	5	6				5	_	-	6							25	-
ALTIT (H,M,L)	0-3	3	3	2	1	3	3	0	3	3	0	3	3	0	3	3	3	3	2	0	1	3	3	3	2	1		3	2	3	3
CRUISING SPEED	0-15		9			10			10			5			6			6			6		L	8			6			6	
BOMB LOAD	0-63		4			0			4		L	7		_	7	_	-	0	_	L	5	_	L	3	1	L	2	_	-	8	_
CHAR (F,V,M,P)	0-7	4	3 :	5 3	6	3 4	2	3	2 1	2	2	2 0	0	1	2 4	0	4	4 6	3	1	1 4	10	2	2 5	1	1	2 3	0	3	3 0	10
ALLIED	Y/N		Y			Y			Y		Y		Y		Y		Y		Y		н		L	Н		N					
CARRIER	Y/N	Г	Y			Y			H			N			Y			Y		L	Y		L	Y		L	Н			н	
SEAPLANE	Y/N		H			N			H			Y			N			н			H		L	H			Y			Y	
TORPEDO	Y/N	Γ	н			н			н			н			Y			H			Y		L	Н			н			Y	
NIGHT	Y/N		н			N			H			Y			Н			N			H		L	N			Н			Y	
ANTI-SUB	Y/N	T	N			N			N			N			N			N			N		L	N		-	N			H	_

PLANE #	0-63	53 1				12		13			14			15			
TYPE	(5)	PETE			2	ERC		DAVE			K	AT	E	C	LAU	0	
ROLE	0-2		2			0			2			1			0		
CREW	0-5	1			0			1			2				0		
RANGE (N,E,T)	0-31	3	4	4	7	8	10	5	5	6	8	10	11	3	4	6	
ALTIT (H,M,L)	0-3	2	3	3	2	3	3	0	3	3	1	3	3	2	3	3	
CRUISING SPEED	0-15		7			9			5			7			9		
BOMB LOAD	0-63		1		1		1			6			1				
CHAR (F,V,M,P)	0-7	2	2 5	5 0	4	2 7	3	2	1 3	0	1	2	3 0	2	2	7 1	
ALLIED	Y/N		H			H			н		L	H		L	N		
CARRIER	Y/N		N			Y			И			Y			Ý		
SEAPLANE	Y/N		Y			H		Y			н			н			
TORPEDO	Y/N		н			н			H		Y		'		Н		
NIGHT	Y/N	н		N			N			N			N				
ANTI-SUB	Y/N	н		N		N			N			И					

Carriers

CARRIER #	1-31	1	2	3	4	5
CARRIER NAME	(11)	FORMIDABLE	INDONITABLE	HERMES	AKAGI	SORYU
AIR CAPACITY	1-127	36	47	15	90	71
SHIP CLASS #	0-63	1	1	2	27	28
TASK GROUP	1-23	2	2	5	1	1
ASSIGNED SQUADRON	(5)	15,16	12,13,14	17	18, 19, 20, 21	22,23,24,25
SPOT NUMBER	0-15	4	5	2	7	6
DAMAGE CONTROL	0-3	1	1	1	1	1
DAMAGE STATUS	0-3	15	15	15	15	15
RADAR	0-7	2	2	0	0	0
AA ACCURACY	0-3	1	1	0	1	1

CARRIER \$	1-31	6	7	8	9
CARRIER NAME	(11)	HIRYU	SHOKAKU	ZUIKAKU	RYUJ0
AIR CAPACITY	1-127	73	84	84	48
SHIP CLASS #	0-63	29	30	30	31
TASK GROUP	1-23	1	1	1	4
ASSIGNED SQUADRON	(5)	26,27,28,29	30, 31, 32, 33	34,35,36,37	38, 39, 40
SPOT NUMBER	0-15	6	7	7	4
DAMAGE CONTROL	0-3	1	1	1	1
DAMAGE STATUS	0-3	15	15	15	15
RADAR	0-7	0	0	0	0
AA ACCURACY	0-3	1	1	1	1

Squadrons

SQUADRON #	1-126	1	2	3	4	5	6	7	8	9	10	11	12	13
PLANE CLASS	0-63	1	1	1	2	3	4	4	2	2	7	5	2	1
F OF AIRCRAFT	1-63	22	16	17	6	17	3	3	4	4	9	8	12	9
EXHAUSTION	0-7	7	7	7	7	7	6	6	7	7	7	7	7	7
EXPERIENCE	0-3	2	1	2	1	2	2	2	1	1	1	1	2	2
ADMIN	0-3	1	1	1	1	1	2	2	1	1	1	1	2	2
RECON OPS	Y/N	N	N	N	N	N	Y	Y	н	N	Y	Y	N	N
NIGHT OPS	Y/N	N	N	N	N	N	Y	Y	н	N	н	н	Y	N
CARRIER OPS	Y/N	н	н	н	н	н	н	н	н	н	н	N	Y	Y
						-		20	21	22	23	24	25	26
SQUADRON &	1-126	14	15	16	17	18	19	20	21	22	23	24	23	20

SQUADRON #	1-126	14	15	16	17	18	19	20	21	22	23	24	25	20
PLANE CLASS	0-63	5	6	5	7	12	12	8	14	12	12	8	14	12
# OF AIRCRAFT	1-63	24	12	21	12	10	12	23	19	11	9	20	23	10
EXHAUSTION	0-7	7	7	7	7	5	5	5	5	5	5	5	5	5
EXPERIENCE	0-3	2	2	2	2	3	3	3	3	3	3	3	3 .	3
ADMIN	0-3	2	2	2	1	2	2	2	2	2	2	2	2	2
RECON OPS	Y/N	н	И	N	Y	N	N	N	N	н	N	N	N	N
NIGHT OPS	Y/N	Y	н	Y	Y	N	N	N	N	N	N	N	N	N
CARRIER OPS	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

SQUADRON \$	1-126	27	28	29	30	31	32	33	34	35	36	37	38	39
PLANE CLASS	0-63	12	8	14	12	12	8	14	12	12	8	14	15	15
# OF AIRCRAFT	1-63	9	19	20	9	12	19	20	10	10	21	22	9	9
EXHAUSTION	0-7	5	5	5	5	5	5	5	5	5	5	5	6	6
EXPERIENCE	0-3	3	3	3	2	2	2	2	2	2	2	2	2	2
ADMIN	0-3	2	2	2	2	2	2	2	2	2	2	2	1	1
RECON OPS	Y/N	н	N	N	н	н	N	N	н	N	н	H	N	N
NIGHT OPS	Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N
CARRIER OPS	Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

-	SQUADRON 8	1-126	40	41	42	43	44	45	46	47	48	49	50	51	52	53
1	PLANE CLASS	0-63	14	11	11	11	9	9	9	9	13	13	9	9	10	11
	# OF AIRCRAFT	1-63	12	3	3	3	3	5	5	3	3	3	3	3	11	7
	EXHAUSTION	0-7	6	7	7	7	7*	7	-7	7	7	7	7	7	7	7
	EXPERIENCE	0-3	2	2	2	2	2	1	1	2	2	2	2	2	2	2
	ADMIN	0-3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	RECON OPS	Y/N	н	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	NIGHT OPS	Y/N	н	N	N	N	N	N	н	н	N	N	н	N	Y	N
	CARRIER OPS	Y/N	Y	N	н	N	N	N	N	н	н	N	N	N	н	N

Land Bases

BASE &	1-23		:	L				2			:	3			4	1	
NAME	(11)	R	ATMA	LANA		RA	CEC	OURSE		C	HIN	BAY	1		KOGG	ALA	
LOCATION	(X,Y)		21,	44			21,	44			25,	38			24,	47	
ASSIGNED SQUADRON	(10)		1,4	1,5			2	2		3,	8,9,	10,1	11		6,	7	
HEAVY AA	0-31		8	3			()			-	1			()	
LIGHT AA	0-31		6	5			2	2			-	ı			()	
SPOT NUMBER	0-15		9	,			-	1			7	,			1		
DAMAGE STATUS	0-15		1	5			1	5			1	5			1	5	
AIRSTRIP	0-7		:	3			:	L			(1			(
RADAR	0-7			1			(0			-	1			()	
AA ACCURACY	0-3	T		1				0			:	1			()	
DAMAGE CONTROL	0-3		-	0			-	0			(0			()	
THEATRE	0-1		-	0			-	0)			()	
ALLIED	Y/N			Y				Y		Y		Y			,		
FIGHTER FAC.	Y/N			Y			,	Y				4			1	4	
BOMBER FAC.	Y/N		,	Y			-	N			,	Y			1	4	
PORT FACILITIES	Y/N			Y			-	4				4			,	′	
		н	N	s	Y	H	N	s	N	N	N	s	Y	H	N	S	1
SEARCH PATTERN	Y/N	NE	Y	SM	н	ME	N	SW	N	ME	Y	SW	н	NE	Y	SM	,
SERRUM PATTERN	1/1/	E	Y	v	N	E	H	٧	N	EYWN		N	E	Y	¥	1	
		SE	Y	M	N	SE	N	M	N	Œ	Y	MW	N	Œ	Y	MH	1

BASE #	1-23		5				6				7		
NAME	(11)	AD	DU A	TOLL			BOMB	AY		PO	RT B	LAIR	
LOCATION	(X,Y)		1,6	6			0,1	2			67,	26	
ASSIGNED SQUADRON	(10)		-				-				52,	53	
HEAVY AA	0-31		0				2			0			
LIGHT AA	0-31		1				2				2		
SPOT NUMBER	0-15		1				5						
DAMAGE STATUS	0-15	15	5			15	5			15	5		
AIRSTRIP	0-7 0 3							0	0				
RADAR	0-7 0 0						0						
AA ACCURACY	0-3 0 0						0						
DAMAGE CONTROL	0-3		0			0					0	1	
THEATRE	0-1		0	<u> </u>			0	1			0	1	_
ALLIED.	Y/N		١	,			4	_			N	(
FIGHTER FAC.	Y/N		١	1			1	1			Y	'	
BOMBER FAC.	Y/N	L	1	1			1	1			١	1	
PORT FACILITIES	Y/N		,	1			1	_			١		_
		H	N	S	N	H	N	S	N	H	N	S	L
OF A DOLL DATTEDN	Y/N	NE	н	SW	N	NE	N	SW	н	ME	N	SM	L
SEARCH PATTERN	T/N	E	N	v	N	E	N	¥	N	E	N	v	1
		SE	N	NW	N	Œ	N	M	N	Œ	N	MH	

Briefing and Start Times

		AXIS	ALLIED
MORALE	0-3	2	1
ASW TECH	0-3	0	2
RADAR TECH	0-3	0	1
FIRE CONTROL	0-3	2	1
INVASION MULTIPLE	0-3	0	0
AERIAL TORPS	0-3	3	2
SURFACE TORPS	0-3	3	2
SUBMARINE TORPS	0-3	3	2
ABORT DIRECTION	0-7	2	5

	. [AXIS	ALLIED
SURPRISED	Y/N	N	N
PARA-FRAG BOMBS	Y/N	N	N
CLEAR MAP POINTS	Y/N	Y	Y
COASTWATCHER #1	YM	-	73,11
COASTWATCHER #2	Y/N	-	70,44
COASTWATCHER #3	Y/N	-	65,31
COASTWATCHER \$4	Y/N	-	67,21
ANCHOR POINT \$1	Y/N	-	-
ANCHOR POINT \$2	Y/N	-	-

0-23	20
1-31	3
1-12	4
0-55	42
3-10	6
15-22	19
0-23	22
1-9	5
0-3	0
	1-31 1-12 0-55 3-10 15-22 0-23 1-9

Ship Classes

SHIP CLASS #	0-63	1	2	3	4	5	6	7	8
SHIP CLASS NAME	(8)	CV 1939	CVL1919	BB 1913	BB 1914A	BB 1914B	CA 1926	CA 1928	CL 1916
ALLIED	Y/N	Y	Y	Y	Y	Y	Y	Y	Y
SEAPLANE	Y/N	N	н	н	н	н	N	N	N
SHIP TYPE	0-4	0	0	1	1	1	1	1	2
MAXIMUM SPEED	0-45	31	25	24	22	22	32	32	29
DISPLACEMENT	0-31	12	9	15	12	12	6	6	2
HEAVY AA	0-31	16	3	8	8	8	4	8	6
LIGHT AA	0-31	12	2	8	10	10	4	6	4
ARMOUR	0-15	5	3	10	9	9	4	4	3
PRIMARY GUNS	0-15	0	0	8	8	8	8	8	0
SECONDARY GUNS	0-15	8	3	8	12	12	2	4	5
TORPEDO TUBES	0-15	0	0	0	0	2	0	8	8
VULNERABILITY	0-7	4	3	4	3	3	4	4	1
ANTI-SUBMARINE	0-7	0	0	0	0	0	0	0	0
TORPEDO LOADS	0-3	0	0	0	0	3	0	2	2

SHIP CLASS #	0-63	9	10	11	12	13	14	15	16
SHIP CLASS NAME	(8)	CL 1917	CL1919	DO 1918	DO 1917	DD 1929	DO 1931	DD 1934	DO 1935
ALLIED	Y/N	Y	Y	Y	Y	Y	Y	Y	Y
SEAPLANE	Y/N	н	н	N	н	н	н	N	н
SHIP TYPE	0-4	2	2	2	2	2	2	2	2
MAXIMUM SPEED	0-45	29	33	36	34	35	36	36	36
DISPLACEMENT	0-31	2	3	0	0	1	1	1	1
HEAVY AA	0-31	3	3	1	1	0	0	0	1
LIGHT AA	0-31	2	4	1	2	1	0	0	0
ARMOUR	0-15	2	3	0	0	0	0	0	0
PRIMARY GUNS	0-15	0	0	0	0	0	0	0	0
SECONDARY GUNS	0-15	6	6	1	2	2	2	2	2
TORPEDO TUBES	0-15	12	8	0	3	4	8	8	4
VULNERABILITY	0-7	2	2	1	2	3	3	4	4
ANTI-SUBMARINE	0-7	0	0	1	1	1	1	2	2
TORPEDO LOADS	0-3	1	2	0	2	3	2	2	3

SHIP CLASS #	0-63	17	18	19	20	21	22	23	24
SHIP CLASS NAME	(8)	DO 1938	00 1941	CL NETH	DO NETH	AMC1925	COR1940	SDS1907	TR SMALL
ALLIED	Y/N	Y	Y	Y	Y	Y	Y	Y	Y
SEAPLANE	Y/N	N	N	N	N	N	N	N	N
SHIP TYPE	0-4	2	2	2	2	2	2	4	4
MAXIMUM SPEED	0-45	36	37	34	38	14	16	13	10
DISPLACEMENT	0-31	1	1	2	1	6	0	2	1
HEAVY AA	0-31	6	4	10	5	2	0	0	0
LIGHT AA	0-31	1	1	2	2	2	i	0	0
ARMOUR	0-15	0	0	1	0	0	0	0	0
PRIMARY GUNS	0-15	0	0	0	0	0	0	0	0
SECONDARY GUNS	0-15	3	2	5	3	7	1	0	0
TORPEDO TUBES	0-15	10	8	0	8	0	0	0	0
YULNERABILITY	0-7	5	5	4	5	1	4	2	1
ANTI-SUBMARINE	0-7	2	2	0	1	0	1	0	0
TORPEDO LOADS	0-3	1	2	0	1	0	0	0	0

SHIP CLASS #	0-63	25	26	27	28	29	30	31	32
SHIP CLASS NAME	(8)	TR MED	TR LARGE	CV 1925	CV 1935	CV 1937	CV 1939	CVL 1931	BC 1912
ALLIED	Y/N	Y	Y	N	N	N	N	N	N
SEAPLANE	Y/N	н	н	н	н	н	н	N	Y
SHIP TYPE	0-4	4	4	0	0	0	0	0	1
MAXIMUM SPEED	0-45	9	9	31	34	34	34	29	30
DISPLACEMENT	0-31	2	4	17	8	9	12	4	15
HEAVY AA	0-31	0	0	12	12	12	16	8	8
LIGHT AA	0-31	0	0	4	4	4	5	4	3
ARMOUR	0-15	0	0	10	2	2	9	1	8
PRIMARY GUNS	0-15	0	0	0	0	0	0	0	8
SECONDARY GUNS	0-15	0	0	6	6.	6	8	0	14
TORPEDO TUBES	0-15	.0	0	0	0	0	0	0	0
YULNERABILITY	0-7	1	2	1	2	2	2	1	4
ANTI-SUBMARINE	0-7	0	0	0	0	0	0	0	0
TORPEDO LOADS	0-3	0	0	0	0	0	0	0	0

Ship Classes (cont)

SHIP CLASS #	0-63	33	34	35	36	37	38	39	40
SHIP CLASS NAME	(8)	BC 1912B	CA 1937	CL 1921	CL 1923	DD 1927	DD 1935	DD 1936	DD 1938
ALLIED	Y/N	N	И	И	N	N	N	N	N
SEAPLANE	Y/N	Υ.	Y	н	N	N	N	N	N
SHIP TYPE	0-4	1	1	2	2	2	2	2	2
MAXIMUM SPEED	0-45	30	35	36	35	34	34	35	35
DISPLACEMENT	0-31	15	6	2	3	1	1	1	1
HEAVY AA	0-31	4	8	1	1	6	5	6	6
LIGHT AA	0-31	3	2	1	1	1	i	1	1
ARMOUR	0-15	8	6	3	3	0	0	0	0
PRIMARY GUNS	0-15	8	8	0	0	0	0	0	0
SECONDARY GUNS	0-15	14	4	4	4	3	3	3	3
TORPEDO TUBES	0-15	0	12	8	8	9	6	8	8
VULNERABILITY	0-7	4	4	2	3	3	4	4	5
ANTI-SUBMARINE	0-7	0	0	0	0	2	1	2	2
TORPEDO LOADS	0-3	0	2	2	2	1	2	2	2

SHIP CLASS #	0-63	41	42	43
SHIP CLASS NAME	(8)	SS 1934	CA 1930	CA 1934
ALLIED	Y/N	N	N	N
SEAPLANE	Y/N	N	Y	Y
SHIP TYPE	0-4	3	1	1
MAXIMUM SPEED	0-45	23	y 34	35
DISPLACEMENT	0-31	1	6	6
HEAVY AA	0-31	1	8	8
LIGHT AA	0-31	1	2	2
ARMOUR	0-15	1	5	6
PRIMARY GUNS	0-15	0	10	10
SECONDARY GUNS	0-15	0	4	4
TORPEDO TUBES	0-15	6	15	12
VULNERABILITY	0-7	3	4	3
ANTI-SUBMARINE	0-7	0	0	0
TORPEDO LOADS	0-3	2	2	2

Task Groups (Axis)

SEARCH PATTERN	Y/N				N	E	N	w	Y	E	N	w	N	E	N	W	4
		NE	И	SW	N	NE	н	SW	. Y	ME	N	SW	N	NE	N	SW	١
		H	н	S	И	н	Y	S	н	н	N	S	н	H	н	S	1
START AREA	Y (x,y)		55,	60			55	60			55	60			74	,37	
TF COMMAND	Y/N	Y					-	1			1	4			1	Y	
REINFORCEMENT	0-9	0					()			()			- ()	
TF ADMIN	0-3	2					1	2			3	2 -			1	2	
TASK FORCE #	0-3	0 2					()			()			1	1	
ENDURANCE	0-31		2	4			2	4			1	2			2	0	
HEADING	0-7		6	5			6				6	5			-	7	
MISSION	0-7		(2				2	2			(
OBJECTIVE	0-23		1				(()			()	
TOTAL SHIPS	(-)		5	5			6				1	2			3	5	
FLAGSHIP	(-)		AKA	GI			BC	1			CL	8			CA	12	
TASK GROUP (AXIS)	1-23	_	1	1			- 2				-	5		_	-		_

TASK GROUP (AXIS)	1-23	T		5			6	5			7	7	
FLAGSHIP	(-)	Г	CA	13			CA	15			CL	14	
TOTAL SHIPS	(-)		(1			4				8	3	
OBJECTIVE	0-23		()			()			()	
MISSION	0-7		2				2	2			2	2	
HEADING	0-7		-	,			7	,			7	,	
ENDURANCE	0-31		1	6			1	6			1	0	
TASK FORCE #	0-3		:	1			1	1	1		1	1	
TF ADMIN	0-3		1	2			2	2			2	2	
REINFORCEMENT	0-9		((()	
TF COMMAND	Y/N		1	١.			. 1	4			1	4	
START AREA	Y (x,y)		74	37			74.	37			74,	.37	
		н	N	S	N	н	н	S	N	H	H	S	N
054501154775011		NE	N	SW	N	HE	N	SW	N	ME	н	SM	N
SEARCH PATTERN	Y/N	E	N	A	Y	E	N	W	N	E	н	٧	н
		SE	N	M	Y	SE	N	MM	N	Œ	H	MM	N

Task Groups (Allied)

TASK GROUP (ALLIED)	0-23		1				2				3	5			-	1	
FLAGSHIP	(-)	Т	CA	56			вв	03			CL	66			BB	05	
TOTAL SHIPS	(-)		2				3				8				1	1	
OBJECTIVE	0-23		1				5				0)			(
MISSION	0-7		C)			0				2	2			3		
HEADING	0-7		()			5				5	5				;	
ENDURANCE	0-31		1	0			1	7			1	0			8	3	
TASK FORCE #	0-3		0)			C				()			()	
TF ADMIN	0-3		1				1				()		9	()	
REINFORCEMENT	0-9		()			C				()			()	
TF COMMAND	Y/N		1	4			١				1	1			1	1	
START AREA	Y (x,y)		18,	53			13,	60			13,	60			15,	59	_
		н	N	S	N	н	N	S	N	N	н	S	N	н	N	S	1
	VAL	HE	N	SW	N	HE	Y	SW	N	HE	N	SW	N	ME	N	SW	1
SEARCH PATTERN	Y/N	E	N	¥	N	E	Y	٧	N	E	N	٧	N	E	N	٧	
		SE	- н	W	И	SE	Y	NV	н	SE	н	HW	н	Œ	н	166	1

TASK GROUP (ALLIED)	0-23			5			1	5				7			-	В	
FLAGSHIP	(-)	T	HER	MES			AM	1			COF	264			TR	2	
TOTAL SHIPS	(-)			2				3			:	2				1	
OBJECTIVE	0-23	T		3			()			((5	
MISSION	0-7	T		0			()			()				5	
HEADING	0-7		-	0			()			(5	
ENDURANCE	0-31	12					()			()			2	5	
TASK FORCE #	0-3	T	()			1	L			2	2			:	3	
TF ADMIN	0-3			L			()			. ()			()	
REINFORCEMENT	0-9	1 0					()			(()	
TF COMMAND	Y/N		1	N			,	,			,	1			,	1	
START AREA	Y (x,y)		25	54			21.	44			25.	38			44	,1	
		н	N	S	N	н	н	S	N	H	N	S	N	H	N	S	
CEADOU DATTEDA	VAL	NE	Y	SW	И	WE	N	SW	н	NE	N	SW	N	ME	N	SW	
SEARCH PATTERN	Y/N	E	Y	¥	N	E	N	W	Н	E	н	W	N	E	н	V	
		Œ	Y	W	N	Œ	N	M	N	Œ	N	HW	N	Œ	N	IN	Ī

MISSION	0-7	+	-	_				_			9	_			-	5	
HEADING ENDURANCE	0-7	+	2				1				1				2	-	
TASK FORCE #	0-31	+	_	3			3	_			2	_			3	_	
TF ADMIN	0-3	0					(,	P		0	,		-	(,	
REINFORCEMENT	0-9	0					(()			()	
TF.COMMAND	Y/N	N			183		1	-				1				4	
START AREA	Y (x,y)		32.	.22			30,	15			33,	10			24,	28	
SIRKI RRER	1 (2,3)	N	N N	S	н	н	N.	s	н	N	H		н	н		s	
		-	-	_		NF	N	SW	N	NF	N	SW		NE	N	SW	1
SEARCH PATTERN	Y/N	ME	N	SM		NE	H	SW	н	NE	N	_	N	NE		-	4
SERRUM PATTERN	T/N	E	N	¥	N	E	н	¥	N	E	N	٧	н	E	N	v	
		SE	N	HW	N	SE	н	HW	N	SE	N	MM	N	SE	N	NU	+

TASK GROUP (ALLIED)	1-23		1	3			1	4			1	5			1	6	
FLAGSHIP	(-)	Т	TR	11			TR	12			TR	4			TR	5	
TOTAL SHIPS	(-)							5			3	5			-		
OBJECTIVE	0-23		6	5				5			3	5				5	Į.
MISSION	0-7			5				5				5				5	
HEADING	0-7			5			-					5			:	5	
ENDURANCE	0-31		1	5			1	2			1	4			2	1	
TASK FORCE 8	0-3			3				5			2	5				3	
TF ADMIN	0-3	T	()			()			()			(
REINFORCEMENT	0-9		()			()			()				5	
TF COMMAND	Y/N		1	4			1	1			1	1			1	1	
START AREA	Y (x,y)		31.	.23			25	16			40	, 9			44	,0	
		H	N	S	N	H	N	S	И	H	н	S	N	H	N	S	
05.00011.00775011	V. 8.1	HE	N	SM	N	HE	N	SM	н	HE	н	SW	N	ME	N	SW	1
SEARCH PATTERN	Y/N	E	H	v	H.	E	H	¥	н	E	н	٧	н	E	N	٧	
		SE	N	NW	N	Œ	N	NH	N	Œ	N	Mil	N	SE	н	N	

Other Ships

SHIP \$	0-215	1	2	3	4	5	6	7	8	9	10	11
PENNANT #	(5)	BB 03	BB 05	BB 06	BB 07	BB 09	CA 56	CA 40	CL 53	CL 46	CL 52	CL 66
SHIP CLASS #	0-63	3	4	5	4	4	6	7	8	9	10	10
DAMAGE CONTROL	0-3	2	2	2	2	2	1	1	1	1	1	1
DAMAGE STATUS	0-15	15	15	15	15	15	13	14	15	15	15	15
CARGO	0-15	0	0	0	0	0	0	0	0	0	0	0
RADAR	0-7	2	2	0	2	2	2	2	0	0	0	0
AA ACCURACY	0-3	1	0	0	0	0	1	1	0	0	1	1
TASK GROUP	0-31	2	4	4	4	4	1	1	4	4	3	3
ASSIGN SUB PATROL	Y(x,y)	-	-	-	-	-	-	-	-	-	-	-
SUBMARINE DEPTH	0-7	-	-	-	-	-	-	-	-	-	-	-
SUBMARINE SPEED	0-7	-	-	-	-	-	-	-	-	-	-	-
SEAPLANE SQUADRON	(1)	-	-	-	-	-	-	-	-	-	-	-

SHIP #	0-215	12	13	14	15	16	17	18	19	20	21	22
PENNANT #	(5)	DDH51	DDH04	00068	DDH42	D0H75	DDH69	DOH70	DDH01	DDH31	DDG02	DDG49
SHIP CLASS &	0-63	11	11	12	13	14	15	15	16	16	17	17
DAMAGE CONTROL	0-3	1	0	1	1	1	1	1	1	1	1	1
DAMAGE STATUS	0-15	15	11	15	15	15	15	15	15	15	15	15
CARGO	0-15	0	0	0	0	0	0	0	0	0	0	0
RADAR	0-7	0	0	0	0	0	0	0	0	0	0	0
AA ACCURACY	0-3	0	0	0	0	0	0	0	0	0	1	1
TASK GROUP	0-31	4	6	5	4	4	3	4	3	4	4	3
ASSIGN SUB PATROL	Y(x,y)	-	-	-	-	-	-	-	-	-	-	-
SUBMARINE DEPTH	0-7	-	-	-	-	-	-	-	-	-	-	-
SUBMARINE SPEED	0-7	-	-	-	- >	-	-	-	-	-	-	-
SEAPLANE SQUADRON	(1)	-	-	-	-	-	-	-	-	-	-	-

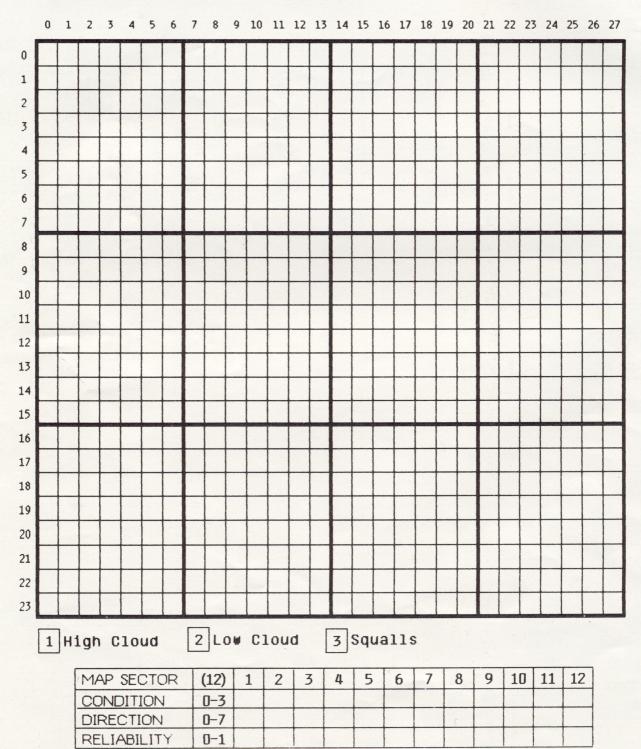
SHIP #	0-215	23	24	25	26	27	28	29	30	31	32	33
PENNANT \$	(5)	DDG97	DDG41	DDG69	CL NI	DO NT	AMC1	COR64	SDS27	TR 1	TR 2	TR 3
SHIP CLASS #	0-63	17	18	18	19	20	21	22	23	26	26	26
DAMAGE CONTROL	0-3	1	1	1	1	1	0	0	0	0	0	0
DAMAGE STATUS	0-15	15	15	15	15	13	15	9	15	15	15	15
CARGO	0-15	0	0	_0	0	0	0	0	0	3	8	8
RADAR	0-7	0	0	0	0	0	0	0	0	0	0	0
AA ACCURACY	0-3	1	1	1	1	1	0	0	0	0	0	0
TASK GROUP	0-31	3	3	3	4	4	6	7	6	7	8	12
ASSIGN SUB PATROL	Y(x,y)	-	-	-	-	-	-	-	-	-	-	-
SUBMARINE DEPTH	0-7	-	-	-	-	-	-	-	-	- 1	-	-
SUBMARINE SPEED	0-7	-	-	-	-	-	-	-	-	-	-	-
SEAPLANE SQUADRON	(1)	-	-	-	-	-	-	-	-	-	-	-

SHIP #	0-215	34	35	36	37	38	39	40	41	42	43	44
PENNANT 8	(5)	TR 4	TR 5	TR 6	TR 7	TR 8	TR 9	TR 10	TR 11	TR 12	TR 13	TR 14
SHIP CLASS #	0-63	26	26	26	26	25	25	25	25	25	25	24
DAMAGE CONTROL	0-3	0	0	0	0	0	0	0	0	0	0	0
DAMAGE STATUS	0-15	15	15	15	15	15	15	15	15	15	15	15
CARGO	0-15	8	8	8	8	4	4	4	4	4	4	2
RADAR	0-7	0	0	0	0	0	0	0	0	0	0	0
AA ACCURACY	0-3	0	0	0	0	0	0	0	0	0	0	0
TASK GROUP	0-31	15	16	8	9	8	8	11	13	14	15	9
ASSIGN SUB PATROL	Y(x,y)	-	-	-	-	-	-	-	-	-	-	-
SUBMARINE DEPTH	0-7	-	-	-	-	-	-	-	-	-	-	-
SUBMARINE SPEED	0-7	-	-	-	-	-	-	-	-	-	-	-
SEAPLANE SQUADRON	(1)	-	-	-	-	-	-	-	-	-	-	-

SHIP #	0-215	45	46	47	48	49	50	51	52	53	54	55
PENNANT #	(5)	TR 15	-	TR 17	TR 18	TR 19	_	TR 21	_		-	
SHIP CLASS #	0-63	24	24	24	24	24	TR 20	24	24	24	TR 24	TR 25
DAMAGE CONTROL	0-03	0	0	0	0	0			0			
DAMAGE STATUS	0-15	15	15	15	15	15	15	0		0	0	0
CARGO	0-15	2	2	2	2	2	2	15	15	15	15	15
RADAR	0-15	0	0	0	0	0	0	0	0	0	0	0
AA ACCURACY	0-7	0	0	0	0	0	0	0	0	0	0	0
TASK GROUP	0-31	9	9	10	10	13	13	-	-	-		
ASSIGN SUB PATROL	-	9	9	10	10	13	13	14	16	16	16	10
SUBMARINE DEPTH	Y(x,y)	-	-	-	-	-	-	-	-	-	-	
SUBMARINE SPEED	0-7	-	-	-	-	-	-	-	-	-	-	-
SEAPLANE SQUADRON		-	-	-	-	-	-	-	-	-	-	-
	(1)	_				_	_	_	_	_	-	_
SHIP #	0-215	56	57	58	59	60		62 -	63	64	65	66
PENNANT #	(5)	TR 26	TR 27	TR 28	TR 29	TR 30		BC 1	BC 2	BC3	BC 4	CA 17
SHIP CLASS #	0-63	24	24	24	24	24		32	33	32	32	34
DAMAGE CONTROL	0-3	0	0	0	0	0		2	2	2	2	1
DAMAGE STATUS	0-15	15	15	15	15	15		15	15	15	15	15
CARGO	0-15	2	2	2	2	2	-1	0	0	0	0	0 .
RADAR	0-7	0	0	0	0	0		0	0	0	0	0
AA ACCURACY	0-3	0	0	0	0	0		1	1	1	1	1
TASK GROUP	0-31	11	12	13	14	15		2	2	2	2	2
ASSIGN SUB PATROL	Y(x,y)	-	-	-	-	-		-	-	-	-	-
SUBMARINE DEPTH	0-7	-	-	-	-	-		-	-	-	-	-
SUBMARINE SPEED	0-7	-	-	-	-	-		-	-	-	-	-
SEAPLANE SQUADRON	(1)		-	-	-	-		41	42	43	44	45
SHIP #	0-215	67	68	69	70	71	72	73	74	75	76	77
PENNANT #	(5)	CA 18	CA 12	CA 13	CA 14	CA 15	CA 16	CL 8	CL 9	CL 14	00 75	0079
SHIP CLASS #	0-63	34	42	43	43	43	43	35	35	36	39	39
DAMAGE CONTROL	0-3	1	2	2	2	2	2	1	1	1	1	1
DAMAGE STATUS	0-15	15	15	15	15	15	15	15	15	15	15	15
CARGO	0-15	0	0	0	0	0	0	0	0	0	0	0
RADAR	0-7	0	0	0	0	0	0	0	0	0	0	0
AA ACCURACY	0-3	1	1	1	1	1	1	1	1	1	1	1
TASK GROUP	0-31	2	4	5	5	6	6	3	4	7	3	3
ASSIGN SUB PATROL	Y(x,y)	-	-	-	-	-	-	-	-	-	-	-
SUBMARINE DEPTH	0-7	-	-	-	-	-	-	-	-	-	-	- 1
SUBMARINE SPEED	0-7	-	-	-	-	-	-	-	-	-	-	-
SEAPLANE SQUADRON	(1)	46	47	48	49	50	51	-	-	-		
						~					-	-
\$ QIH2		78	70	80	81		78	9/1	85	86	87	38
SHIP #	0-215	78 00.87	79 nn 88	80 nn 91	81 nn 92	82	83 nn ge	84 nnee	85 001.01	86	87	88 nn 19
PENNANT &	0-215	DD 87	DD 88	DO 91	DD 92	82 D0 94	DD 98	DD99	D0101	00103	DD 38	DO 39
PENNANT # SHIP CLASS #	0-215 (5) 0-63	DO 87	DD 88	DO 91 40	DD 92 40	82 D0 94 40	DD 98 40	DD99 40	DD101 40	DD103	DD 38	DO 39
PENNANT # SHIP CLASS # DAMAGE CONTROL	0-215 (5) 0-63 0-3	DO 87 40 1	DD 88 40 1	DO 91 40 1	DD 92 40 1	82 00 94 40	DD 98 40 1	0099 40 1	00101 40 1	00103 40 1	DD 38 37 1	00 39 37 1
PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS	0-215 (5) 0-63 0-3 0-15	DO 87 40 1 15	DD 88 40 1 15	DO 91 40 1	00 92 40 1 15	82 D0 94 40 1 15	DO 98 40 1 15	0099 40 1 15	00101 40 1 15	00103 40 1 15	DD 38 37 1 15	00 39 37 1 15
PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO	0-215 (5) 0-63 0-3 0-15 0-15	00 87 40 1 15 0	DD 88 40 1 15 0	00 91 40 1 15	00 92 40 1 15	82 00 94 40 1 15	00 96 40 1 15 0	DD99 40 1 15 0	00101 40 1 15	00103 40 1 15	DD 38 37 1 15	00 39 37 1 15
PENNANT \$ SHIP CLASS \$ DAMAGE CONTROL DAMAGE STATUS CARGO RADAR	0-215 (5) 0-63 0-3 0-15 0-15 0-7	DO 87 40 1 15 0	DD 88 40 1 15 0	DO 91 40 1 15 0	00 92 40 1 15 0	82 D0 94 40 1 15 0	DO 98 40 1 15 0	0099 40 1 15 0	00101 40 1 15 0	00103 40 1 15 0	DD 38 37 1 15 0	37 1 15 0
PENNANT \$ SHIP CLASS \$ DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3	00 87 40 1 15 0 0	DO 88 40 1 15 0 0	DO 91 40 1 15 0 0	00 92 40 1 15 0 0	82 00 94 40 1 15 0 0	00 98 40 1 15 0 0 1 1	D099 40 1 15 0 0	00101 40 1 15 0 0	00103 40 1 15 0 0	00 38 37 1 15 0 0	00 39 37 1 15 0 0
PENNANT \$ SHIP CLASS \$ DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-31	DO 87 40 1 15 0	DD 88 40 1 15 0	DO 91 40 1 15 0	00 92 40 1 15 0	82 D0 94 40 1 15 0	DO 98 40 1 15 0	0099 40 1 15 0	00101 40 1 15 0	00103 40 1 15 0	DD 38 37 1 15 0	37 1 15 0
PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-31 Y(x,y)	00 87 40 1 15 0 0	DO 88 40 1 15 0 0	00 91 40 1 15 0 0 1 3	00 92 40 1 15 0 0	82 00 94 40 1 15 0 0	DO 98 40 1 15 0 0 1 3	D099 40 1 15 0 0	00101 40 1 15 0 0	00103 40 1 15 0 0	00 38 37 1 15 0 0	00 39 37 1 15 0 0 1 7
PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-31 Y(x,y)	00 87 40 1 15 0 0	DO 88 40 1 15 0 0	DO 91 40 1 15 0 0	00 92 40 1 15 0 0 1 3 -	82 D0 94 40 1 15 0 0 1 3	DD 98 40 1 15 0 0 1 3 -	D099 40 1 15 0 0	00101 40 1 15 0 0 1 3 -	00103 40 1 15 0 0 1 3 -	DD 38 37 1 15 0 0 1 7 -	00 39 37 1 15 0 0
PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-31 Y(x,y) 0-7	00 87 40 1 15 0 0	DO 88 40 1 15 0 0	00 91 40 1 15 0 0 1 3	00 92 40 1 15 0 0	82 00 94 40 1 15 0 0	DO 98 40 1 15 0 0 1 3	D099 40 1 15 0 0	00101 40 1 15 0 0	00103 40 1 15 0 0	00 38 37 1 15 0 0	00 39 37 1 15 0 0 1 7
PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED SEAPLANE SQUADRON	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-31 Y(x,y) 0-7 0-7 (1)	DO 87 40 1 15 0 0 1 3 - -	DD 88 40 1 15 0 0 1 3	DO 91 40 1 15 0 0 1 3 -	DO 92 40 1 15 0 0 1 3 - -	82 DD 94 40 1 15 0 0 1 3 - -	DO 98 40 1 15 0 0 1 3 - -	DD999 40 1 15 0 0 1 3	D0101 40 1 15 0 0 1 3 - -	00103 40 1 15 0 0 1 3 -	00 38 37 1 15 0 0 1 7 -	00 39 37 1 15 0 0 1 7 - -
PENNANT \$ SHIP CLASS \$ DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED SEAPLANE SQUADRON SHIP \$	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-31 Y(x,y) 0-7 0-7 (1)	00 67 40 1 15 0 0 1 3 - - -	DD 88 40 1 15 0 0 1 3 90	DO 91 40 1 15 0 0 1 3 - - -	DO 92 40 1 15 0 0 1 92	82 D0 94 40 1 15 0 0 1 3 - - - 93	DD 98 40 1 15 0 0 1 3 94	DD999 40 1 15 0 0 1 3 95	D0101 40 1 15 0 0 1 3 96	D0103 40 1 15 0 0 1 3 - - - 97	DD 38 37 1 15 0 0 1 7 - - -	DO 39 37 1 15 0 0 1 7 99
PENNANT & SHIP CLASS & DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED SEAPLANE SQUADRON SHIP & PENNANT &	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-31 Y(x,y) 0-7 0-7 (1) 0-215 (5)	00 87 40 1 15 0 0 1 3 - - - - 89	DO 88 40 1 15 0 0 1 3 90 DO 41	DO 91 40 1 15 0 0 1 3 - - - 91	00 92 40 1 15 0 0 1 3 - - - - - 92	82 00 94 40 1 15 0 0 1 3 - - - - 93 00 68	DO 98 40 1 15 0 0 1 3 94 00 50	D099 40 1 15 0 0 1 3 95 D0 65	00101 40 1 15 0 0 1 3 - - - - - - - - -	00103 40 1 15 0 0 1 3 - - - - 97 00 67	DD 38 37 1 15 0 0 1 7 98 I-171	00 39 37 1 15 0 0 1 7 - - - - - - 1-172
PENNANT & SHIP CLASS & DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED SEAPLANE SQUADRON SHIP & PENNANT & SHIP CLASS &	0-215 (5) 0-63 0-3 0-15 0-7 0-3 0-31 Y(x,y) 0-7 0-7 (1) 0-215 (5) 0-63	DO 87 40 1 15 0 0 1 3 - - 89 DO 40	00 88 40 1 15 0 0 1 3 90 00 41 37	00 91 40 1 15 0 0 1 3 - - - - 91 000 43	00 92 40 1 15 0 0 1 3 - - - 92 00 51	82 00 94 40 1 15 0 0 1 3 - - - - 93 00 68 38	00 98 40 1 15 0 0 1 3 94 000 50 37	0099 40 1 15 0 0 1 3 95 00 65	00101 40 1 15 0 0 1 3 - - - - 96 0047	00103 40 1 15 0 0 1 3 	00 38 37 1 15 0 0 1 7 - - - - 98 I-171	00 39 37 1 15 0 0 1 7 - - - - 99 I-172
PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED SEAPLANE SQUADRON SHIP # PENNANT # SHIP CLASS # DAMAGE CONTROL	0-215 (5) 0-63 0-15 0-15 0-7 0-3 0-31 Y(x,y) 0-7 (1) 0-215 (5) 0-63 0-3	00 87 40 1 15 0 0 1 3 - - - - - 89 00 40 37	00 88 40 1 15 0 0 1 3 90 00 41 37 1	00 91 40 1 15 0 0 1 3 91 000 43 37 1	00 92 40 1 15 0 0 1 3 - - - 92 00 51 37	82 00 94 40 1 15 0 0 1 3 - - - - 93 00 68 38 1	00 98 40 1 15 0 0 1 3 94 00 50 37 1	D099 40 1 15 0 0 1 3 95 D00 65 38 1	D0101 40 1 15 0 0 1 3 96 D047 37 1	00103 40 1 15 0 0 1 3 	00 38 37 1 15 0 0 1 7 - - - - 98 I-171 41	00 39 37 1 15 0 0 1 7 - - - - 99 I-172 41
PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED SEAPLANE SQUADRON SHIP # PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-31 Y(x,y) 0-7 (1) 0-215 (5) 0-63 0-3 0-15	00 87 40 1 15 0 0 1 3 - - - - 89 00 40 37 1	00 88 40 1 15 0 0 1 3 90 00 41 37 1 15	00 91 40 1 15 0 0 1 3 - - - 91 00 43 37 1	00 92 40 1 15 0 0 1 3 - - - 92 00 51 37 1	82 00 94 40 1 15 0 0 1 3 - - - - 93 00 68 38 1 15	00 96 40 1 15 0 0 1 3 - - - - 94 00 50 37 1	D099 40 1 15 0 0 1 3 95 D00 65 38 1 15	D0101 40 1 15 0 0 1 3 96 D047 37 1 15	00103 40 1 15 0 0 1 3 - - - - - - - - - - - - -	00 38 37 1 15 0 0 1 7 - - - 98 I-171 41 2	00 39 37 1 15 0 0 1 7 - - - - - 99 1-172 41 2
PENNANT & SHIP CLASS & DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED SEAPLANE SQUADRON SHIP & PENNANT & SHIP & PENNANT & SHIP CLASS & DAMAGE CONTROL DAMAGE STATUS CARGO	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-31 Y(x,y) 0-7 0-7 (1) 0-215 (5) 0-63 0-3 0-15 0-15	DO 87 40 1 15 0 0 1 3 89 DO 40 37 1 15 0	00 88 40 1 15 0 0 1 3 - - - - 90 00 41 37 1 15 0	DO 91 40 1 15 0 0 1 3 91 00 43 37 1 15 0	00 92 40 1 15 0 0 1 3 - - - 92 00 51 3 7 1 15	82 00 94 40 1 15 0 0 1 3 - - - 93 00 68 38 1 15 0	00 96 40 1 15 0 0 1 3 94 00 50 37 1 15 0	D099 40 1 15 0 0 1 3 95 D0 65 38 1 15 0	D0101 40 1 15 0 0 1 3 96 D047 37 1 15 0	00103 40 1 15 0 0 1 3 - - - - 97 00 67 38 1 15 0	00 38 37 1 15 0 0 1 7 - - - - 98 I-171 41 2 15	00 39 37 1 15 0 0 1 7 - - - - 99 1-172 41 2 15
PENNANT & SHIP CLASS & DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED SEAPLANE SQUADRON SHIP & PENNANT & SHIP S DAMAGE CONTROL DAMAGE STATUS CARGO RADAR	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-31 Y(x,y) 0-7 (1) 0-215 (5) 0-63 0-3 0-15 0-15	00 87 40 1 15 0 0 1 3 - - - - - - - 1 5 89 00 40 37 1 1 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	00 88 40 1 15 0 0 1 3 90 00 41 37 1 15 0	00 91 40 1 15 0 0 1 3 - - - - 91 000 43 3 7 1 15	00 92 40 1 15 0 0 1 3 - - - - 92 000 51 37 1 15 0	82 D0 94 40 1 15 0 0 1 3 - - - - - - - - - - - - -	D0 96 40 1 15 0 0 1 3 94 000 50 37 1 15 0 0	0099 40 1 15 0 0 1 3 95 00 65 38 1 15 0 0	D0101 40 1 15 0 0 1 3 96 0047 37 1 15 0 0	00103 40 1 15 0 0 1 3 - - - - - - - - - - - - -	00 38 37 1 15 0 0 1 7 - - - - - - - 41 2 15 0 0	00 39 37 1 15 0 0 1 7 - - - - 99 1-172 41 2 15 0
PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED SEAPLANE SQUADRON SHIP # PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-31 Y(x,y) 0-7 (1) 0-215 (5) 0-63 0-3 0-15 0-15 0-7	DO 87 40 1 15 0 0 1 3 89 DO 40 37 1 15 0 0 1	00 88 40 1 15 0 0 1 3 90 00 41 37 1 15 0	00 91 40 1 15 0 0 1 3 - - - - 91 00 43 37 1 15 0	00 92 40 1 15 0 0 1 3 - - - - 92 00 51 3 7 1 15 0 0	82 D0 94 40 1 15 0 0 1 3 - - - - - - - - - - - - -	D0 96 40 1 15 0 0 1 3 94 000 50 37 1 15 0 0 1	0099 40 1 15 0 0 1 3 95 00 65 38 1 15 0 0 1	D0101 40 1 15 0 0 1 3 1 15 0 0 11 15 0 11 15 0 11	00103 40 1 15 0 0 1 3 97 00 67 38 1 15 0 0 1	00 38 37 1 15 0 0 1 7 - - - - - - 41 2 15 0 0 0 1 7 - - - - - - - - - - - - - - - - - -	00 39 37 1 15 0 0 1 7 99 I-172 41 2 15 0 0 0
PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED SEAPLANE SQUADRON SHIP # PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 1 Y(x,y) 0-7 (1) 0-215 (5) 0-63 0-3 0-15 0-15 0-15 0-15 0-7	DO 87 40 1 15 0 0 1 3 89 DO 40 37 1 15 0 0	DO 88 40 1 15 0 0 1 3 90 DO 41 37 1 15 0 0 1 7	DO 91 15 0 0 1 3 91 DO 43 37 1 15 0 0 17	00 92 40 1 15 0 0 1 3 92 00 51 37 1 15 0 0 0 1 7	82 D0 94 40 1 15 0 0 1 3 - - - - - - - - - - - - -	DO 98 40 1 15 0 0 1 3 94 DO 50 37 1 15 0 0 1 5	D099 40 1 15 0 0 1 3 95 D00 65 38 1 15 0 0 1 1 5	D0101 40 1 15 0 0 1 3 96 0047 37 1 15 0 0	00103 40 1 15 0 0 1 3 - - - - - - - - - - - - -	00 38 37 1 15 0 0 1 7 - - - - - - - - - - 15 15 0 0 1 1 7 - - - - - - - - - - - - - - - - -	00 39 37 1 15 0 0 1 7 99 I-172 41 2 15 0 0 0 -
PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED SEAPLANE SQUADRON SHIP # PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-31 Y(x,y) 0-7 (1) 0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-7 (1) 0-215 (2) 0-3 0-3 0-15	00 87 40 1 15 0 0 1 3 	DO 88 40 1 15 0 0 1 3 90 DO 41 37 1 15 0 0 1 7	DO 91 15 0 0 1 3 91 DO 43 37 1 15 0 0 1 7 -	00 92 40 1 15 0 0 1 3 - - - 92 00 51 37 1 15 0 0	82 D0 94 40 1 15 0 0 1 3 - - - - - - - - - - - - -	DO 96 40 1 15 0 0 1 3 94 DO 50 37 1 15 0 0 1 5 1	D099 40 1 15 0 0 1 3 D065 38 1 15 0 0 1 15	D0101 40 1 15 0 0 1 3 96 D047 37 1 15 0 0 1 6	00103 40 1 15 0 0 1 3 97 00 67 38 1 15 0 0 1 6 1	00 38 37 1 15 0 0 1 7 - - - - - - - - - - - 15 0 0 1 7 - - - - - - - - - - - - - - - - - -	00 39 37 1 15 0 0 1 7 - - - - - - - 2 15 0 0 0 1 7 7 - - - - - - - - - - - - - - - - -
PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED SEAPLANE SQUADRON SHIP # PENNANT # SHIP CLASS # DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH	0-215 (5) 0-63 0-3 0-15 0-7 0-7 0-3 0-31 Y(x,y) 0-7 (1) 0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-3 1 Y(x,y)	00 87 40 1 15 0 0 1 3 	DO 88 40 1 15 0 0 1 3 90 DO 41 37 1 15 0 0 1 7	DO 91 15 0 0 1 3 91 DO 43 37 1 15 0 0 17	00 92 40 1 15 0 0 1 3 92 00 51 37 1 15 0 0 0 1 7	82 D0 94 40 1 15 0 0 1 3 - - - - - - - - - - - - -	DO 98 40 1 15 0 0 1 3 94 DO 50 37 1 15 0 0 1 5	0099 40 1 15 0 0 1 3 95 00 65 38 1 15 0 0 1	D0101 40 1 15 0 0 1 3 1 15 0 0 11 15 0 11 15 0 11	00103 40 1 15 0 0 1 3 - - - - - - - - - - - - -	00 38 37 1 15 0 0 1 7 - - - - - - - - - - - - - - 1.71 41 2 15 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	00 39 37 1 15 0 0 1 7 99 I-172 41 2 15 0 0 - 17,58
PENNANT & SHIP CLASS & DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL SUBMARINE DEPTH SUBMARINE SPEED SEAPLANE SQUADRON SHIP & PENNANT & SHIP CLASS & DAMAGE CONTROL DAMAGE STATUS CARGO RADAR AA ACCURACY TASK GROUP ASSIGN SUB PATROL	0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-3 0-31 Y(x,y) 0-7 (1) 0-215 (5) 0-63 0-3 0-15 0-15 0-7 0-7 (1) 0-215 (2) 0-3 0-3 0-15	00 87 40 1 15 0 0 1 3 	DO 88 40 1 15 0 0 1 3 90 DO 41 37 1 15 0 0 1 7	DO 91 15 0 0 1 3 91 DO 43 37 1 15 0 0 1 7 -	00 92 40 1 15 0 0 1 3 - - - 92 00 51 37 1 15 0 0	82 D0 94 40 1 15 0 0 1 3 - - - - - - - - - - - - -	DO 96 40 1 15 0 0 1 3 94 DO 50 37 1 15 0 0 1 5 1	D099 40 1 15 0 0 1 3 D065 38 1 15 0 0 1 15	D0101 40 1 15 0 0 1 3 96 D047 37 1 15 0 0 1 6	00103 40 1 15 0 0 1 3 97 00 67 38 1 15 0 0 1 6 1	00 38 37 1 15 0 0 1 7 - - - - - - - - - - - 15 0 0 1 7 - - - - - - - - - - - - - - - - - -	00 39 37 1 15 0 0 1 7 99 I-172 41 2 15 0 0 0 - 17,58

APPENDIX B Blank Design Forms

Weather Pattern and Forecast



Plane Classes

PLANE #	0-63						
TYPE	(5)						
ROLE	0-2					7-	
CREW	0-5						
RANGE (n,e,t)	0-31						
ALTIT (h,m,l)	0-3						
CRUISING SPEED	0-15						
BOMB LOAD	0-63						
CHAR (f,v,m,p)	0-7						
ALLIED	YN						
CARRIER	YN	-					
SEAPLANE	Y/N						
TORPEDO	YN						
NIGHT	YN				245		
ANTI-SUB	YN						

Squadrons

SQUADRON #	1-126							
PLANE CLASS	0-63							
# OF AIRCRAFT	0-63							
EXHAUSTION	0-7							
EXPERIENCE	0-3							
ADMIN	0-3							
RECON OPS	YN							
NIGHT OPS	Y/N							
CARRIER OPS	Y/N							

Land Bases

BASE #	0-23			A STATE OF THE STA								
NAME	(11)											
LOCATION	(x,y)											
ASSIGNED SQUADRON	(10)											
HEAVY AA	0-31											
LIGHT AA	0-31											
SPOT NUMBER	0-31											
DAMAGE STATUS	0-15								7			
AIRSTRIP	0-7											
RADAR	0-7											
AA ACCURACY	0-3											
DAMAGE CONTROL	0-3											
THEATRE	0-1											
ALLIED	Y/N							-				
FIGHTER FAC.	Y/N											
BOMBER FAC.	YN											
PORT FACILITIES	YN				principal de la constante de l							
And the second second		N	\$	N		\$	N		\$	N	\$	
SEADOLL DATTERN	Y/N	NE	SW	NE		SW	NE		SW	NE	SW	
SEARCH PATTERN	1714	Ε	u	Ε		W	Ε		u	E	u	
CAZON TO SEA WINDOWS TO STATE OF THE SEASON		SE	NW	SE		NU	SE		NU	SE	พม	

Carriers

CARRIER #	0-31				
CARRIER NAME	(11)				
AIR CAPACITY	1-127				
SHIP CLASS #	0-63				
TASK GROUP	0-23				
ASSIGNED SQUADRON	(5)		1		
SPOT NUMBER	0-31				
DAMAGE CONTROL	0-3				
DAMAGE STATUS	0-3				
RADAR	0-7				
AA ACCURACY	0-3		- 35		

Ship Classes

SHIP CLASS #	0-63					
SHIP CLASS NAME	(8)					
ALLIED	YN					
SEAPLANE	YN					
SHIP TYPE	0-4					
MAXIMUM SPEED	0-45					
DISPLACEMENT	0-31					
HEAVY AA	0-31					
LIGHT AA	0-31					
ARMOUR	0-15					
PRIMARY GUNS	0-15					
SECONDARY GUNS	0-15					
TORPEDO TUBES	0-15					
VULNERABILITY	0-7				1.73	
ANTI-SUBMARINE	0-7				No.	
TORPEDO LOADS	0-3					

Other Ships

SHIP #	0-215				A PACE SE	
PENNANT #	(5)					
SHIP CLASS #	0-63				5°	
DAMAGE CONTROL	0-3					
DAMAGE STATUS	0-15		330000			
CARGO	0-15					
RADAR	0-7					
AA ACCURACY	0-3					
TASK GROUP	0-23					
ASSIGN SUB PATROL	Y (x,y)					
SUBMARINE DEPTH	0-7					
SUBMARINE SPEED	0-7					
SEAPLANE SQUADRON	(1)					

Task Groups (Axis or Allied)

TASK GROUP	0-23									T			
FLAGSHIP	(-)										CONTRA		
TOTAL SHIPS	(-)												
OBJECTIVE	0-23												
MISSION	0-7												
HEADING	0-7	U/IU			v (17 7							
ENDURANCE	0-31												
TASK FORCE #	0-3							4-					
TF ADMIN	0-3												
REINFORCEMENT	0-9												
TF COMMAND	Y/N			-									
START AREA	Y (x,y)												
		N	S	N	S		N		\$	N		S	
SEARCH PATTERN	Y/N	NE	SW	NE	SW		NE		SW	NE		SU	
SCHOOL FALLEN	1/14	E	u	Ε	u		E		u	E		·W	
		SE	NW	SE	NU		\$E		NH	SE		ทม	

APPENDIX C

Principal Naval Radar Systems in Use in the Second World War

UNITED STATES	RADAR VALUE
CXBE, SC-1	1
SF-1, SG	2
CXAM	3
CXAM-1, SC-2, SC-5, SM	4
SP	6
SK, SR	7

COMMONWEALTH	RADAR VALUE
267, 268, 272,	2
273, 285	
277, 291	3
279	4
79Y	5
281	7

OTHER POWERS	RADAR VALUE
FuMO-22, FuMO-61 (Ge)	2
SF-1, SG (Sov. Un.)	4
Type 2, Mk 1 (Japan)	3
FuMO-34 (Ge)	4
Type 2, Mk 2 (Japan)	4
EC-3 (Italy)	6
SK (Sov. Un.)	7

APPENDIX D

Japanese, American and Commonwealth Aircraft of the Pacific War

Japanese Aircraft

PLANE #	0-63	PETE	ZERO	ZERO	ZERO	ZERO	ZERO	BETTY	BETTY	BETTY	DAME
TYPE	(5)	F1M2	A6H2	A6M3	A6M5A	A6M5B	A6M5C	G4M1	G4M2	G4H3	E8N2
ROLE	0-2	2	0	0	0	0	0	1	1	1	2
CREW	0-5	1	0	0	0	0	0	4	4	4	1
RANGE (N,E,T)	0-31	3 4 4	7 8 10	6 7 9	4 7 9	3 5 6	3 5 6	12 16 18	12 16 18	7 11 13	5 5 6
ALTIT (H,M,L)	0-3	2 3 3	2 3 3	3 32	3 3 2	3 3 2	3 3 2	1 3 3	2 3 3	2 3 3	0 3 3
CRUISING SPEED	0-15	7	9	10	10	10	10	9	9	9	5
BOMB LOAD	0-63	1		1	1	2	2	6	8	8	1
CHAR (F,V,M,P)	0-7	2 2 5 0	4273	4 2 7 3	4274	4 4 7 4	5 4 6 4	2 1 1 1	3 2 1 1	4 3 1 2	2 1 3 0
ALLIED	Y/N	N	N	N	N	N	N	N	N	N	N
CARRIER	Y/N	N	Y	Y	Y	Y	Y	N	N	N	н
SEAPLANE	Y/N	Y	N	н	N	N	н	N	N	N	Y
TORPEDO	Y/N	N	N	N	N	N	N	Y	Y	Y	N
NIGHT	Y/N	N	N	N	N	N	N	N	N	N	N
ANTI-SUB	Y/N	N	N	N	N	N	N	N	N	N	И
		- WW	TACK.	ww	KATE	KATE	IRVIN	IRVIN	RUFE	лц	RITA
PLANE \$	0-63	JWCK	JWCK	JACK	B5N2	B5N2A	JINIC	JINIS	A6M2N	B6N1	G8Nt.
TYPE	(5)	J2H2	J2H3	J2M5		2	2	0	0	1	1
ROLE	0-2	0	0	0	1	2	2	1	0	2	5
CREW	0-5	0	0	0	2	-	-	-	-	1	
RANGE (N,E,T)	0-31	+	3 6 7	2 4 5	-	10 10 11		-	+	-	11 17 20 2 3 2
ALTIT (H,M,L)	0-3	3 3 3	3 3 3	3 5 2	1 3 3	1 3 3	2 3 2	2 3 2	2 3 3	1 3 3	10
CRUISING SPEED	0-15	10	10	10	,	7	0	0	1	6	15
BOMB LOAD	0-63	1	1	1	6			-			
CHAR (F,V,M,P)	0-7		5 4 5 4			1 2 3 0				1 3 3 2 N	N N
ALLIED	Y/N	N	н	N	N	N	н	N	N	-	
CARRIER	Y/N	H(Y)	H(Y)	N(Y)	Υ	н	H	H	н	Y	н
SEAPLANE	Y/N	н	н	H	N	N	H	N	Y	N	H
TORPEDO	Y/N	N	N	N	Y	N	N	N	N	Y	н
NIGHT	Y/N	H	н	н	н	N	N	Y	N	N	
ANTI-SUB	Y/N	н	н	Н	H	Y	н	н	H	н	н
PLANE \$	0-63	EMILY	EMILY	HORM	REX	GEORG	GEORG	LORMA	CLAUD	NELL	NELL
PLANE \$ TYPE	0-63	EMILY H8K1	EMILY H8K2	MORM E15K1	REX N1K1	GEORG N1K1J	GEORG N1K2J	LORMA Q1W1	CLAUD A5M4	MELL G3M2	NELL G3H3
			_	-		-	-		-	-	-
TYPE	(5)	H8K1	H8K2	E15K1	N1K1	NIKIJ	N1K2J	Q1W1	A5M4	G3M2	G3M3
TYPE ROLE	(5) 0-2	H8K1 2 5	H8K2 2 5	E15K1	0 0	N1K1J 0 0	M1K2J 0	Q1W1 2 2	0 0	G3M2	G3M3 1 4
TYPE ROLE CREW	(5) 0-2 0-5	H8K1 2 5	H8K2 2 5	E15K1 2 1 8 12 14	N1K1 0 0 3 5 5	N1K1J 0 0 4 5 7	N1K2J 0 0	Q1W1 2 2	0 0 3 4 6	G3M2 1 4 9 13 16	G3M3 1 4 9 16 21
TYPE ROLE CREW RANGE (N,E,T)	(5) 0-2 0-5 0-31	H8K1 2 5 12 22 24	H8K2 2 5 12 22 24	E15K1 2 1 8 12 14	N1K1 0 0 3 5 5	N1K1J 0 0 4 5 7	N1K2J 0 0 3 5 7	Q1W1 2 2 6 6 8	0 0 3 4 6	G3M2 1 4 9 13 16	G3M3 1 4 9 16 21
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L)	(5) 0-2 0-5 0-31 0-3	H8K1 2 5 12 22 24 0 3 3	H8K2 2 5 12 22 24 1 3 3	E15K1 2 1 8 12 14 2 3 2	N1K1 0 0 3 5 5 2 3 2	N1K1J 0 0 4 5 7 3 3 2	N1K2J 0 0 3 5 7 3 3 2	Q1W1 2 2 6 6 8 0 1 3	0 0 3 4 6 2 3 3	G3M2 1 4 9 13 16 1 3 3	G3M3 1 4 9 16 21 2 3 2
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED	(5) 0-2 0-5 0-31 0-3 0-15	H8K1 2 5 12 22 24 0 3 3 8 15	H8K2 2 5 12 22 20 1 3 3 8 15	E15K1 2 1 8 12 14 2 3 2 8	N1K1 0 0 3 5 5 2 3 2 10	N1K1J 0 0 4 5 7 3 3 2 10	N1K2J 0 0 3 5 7 3 3 2 10 4	Q1W1 2 2 6 6 8 0 1 3 7	A5M4 0 0 3 4 6 2 3 3 9	G3M2 1 4 9 13 16 1 3 3 7 6	G3H3 1 4 9 16 21 2 3 2 8
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD	(5) 0-2 0-5 0-31 0-3 0-15 0-63	H8K1 2 5 12 22 24 0 3 3 8 15	H8K2 2 5 12 22 20 1 3 3 8 15	E15K1 2 1 8 12 14 2 3 2 8	N1K1 0 0 3 5 5 2 3 2 10	N1K1J 0 0 4 5 7 3 3 2 10	N1K2J 0 0 3 5 7 3 3 2 10 4	Q1W1 2 2 6 6 8 0 1 3 7	A5M4 0 0 3 4 6 2 3 3 9	G3M2 1 4 9 13 16 1 3 3 7 6	G3H3 1 4 9 16 21 2 3 2 8 6
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P)	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7	H8K1 2 5 12 22 24 0 3 3 3 8 15 4 4 0 1	H8K2 2 5 12 22 24 1 3 3 3 8 15 5 4 0 2	E15K1 2 1 4 2 3 2 8 1 2 1 2 4 2	N1K1 0 0 3 5 5 2 3 2 10 1 4 2 5 2	N1K1J 0 0 4 5 7 3 3 2 10 1 5 3 6 4	N1K2J 0 0 3 5 7 3 3 2 10 4 5 3 6 4	Q1W1 2 2 6 6 6 8 0 1 3 7 4 1 2 2 2 2	A5M4 0 0 3 4 6 2 3 3 9 1 2 2 6 1	G3M2 1 4 9 13 18 1 3 3 7 6 2 1 1 0	G3H3 1 4 9 16 21 2 3 2 8 6 2 1 1 1
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N	H8K1 2 5 12 22 24 0 3 3 3 8 15 4 4 0 1 1 N	H8K2 2 5 12 22 24 1 3 3 8 15 5 4 0 2 N	E15K1 2 1 8 12 14 2 3 2 8 1 2 1 2 4 2 N	N1K1 0 0 3 5 5 2 10 1 4 2 5 2	N1K1J 0 0 4 5 7 3 3 2 10 1 5 3 6 4	N1K2J 0 0 3 5 7 3 3 2 10 4 5 3 6 4	Q1W1 2 2 5 6 6 8 0 1 3 7 4 1 2 2 2 N	0 0 0 3 4 6 2 3 3 9 1 2 2 6 1 N	G3H2 1 4 9 13 16 1 3 3 7 6 2 1 1 0	G3H3 1 4 9 16 21 2 3 2 8 6 2 1 1 1 1
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N	H8K1 2 5 12 22 24 0 3 3 3 8 15 4 4 0 1 N	H8K2 2 5 12 22 24 1 3 3 8 15 5 4 0 1 N	E15K1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N1K1 0 0 0 3 5 5 2 3 2 10 1 4 2 5 2 N N	N1K1J 0 0 4 5 7 3 3 2 10 1 5 3 6 4 N H(Y)	N1K2J 0 0 3 5 7 3 3 2 10 4 5 3 6 4 N	Q1W1 2 2 5 6 6 8 0 1 3 7 4 1 2 2 2 N N	A5H4 0 0 0 3 4 6 2 3 3 3 9 1 2 2 6 1 N Y	G3H2 1 4 9 13 16 1 3 3 7 6 2 1 1 0 N	G3H3 1 4 9 16 21 2 3 2 8 6 2 1 1 1 1 N
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N	H8K1 2 5 12 22 24 0 3 3 8 15 4 4 0 1 N N Y	H8K2 2 5 12 22 24 1 3 3 8 15 5 4 0 1 N N	E15K1 2 1 8 12 14 2 3 2 8 1 1 1 2 4 2 N N	N1K1 0 0 0 3 5 5 2 3 2 10 1 4 2 5 2 N N Y	N1K1J 0 0 4 5 7 3 3 2 10 1 5 3 6 4 N N(Y)	N1K2J 0 0 3 5 7 3 3 2 10 4 5 3 6 4 N N(Y)	Q1W1 2 2 6 6 8 0 1 3 7 4 1 2 2 2 N N N	A5M4 0 0 0 3 4 6 2 3 3 3 9 1 2 2 6 1 N Y	G3H2 1 4 9 13 18 1 3 3 7 6 2 1 1 0 N	G3H3 1 4 9 16 21 2 3 2 8 6 2 1 1 1 1 N N
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N	H8K1 2 5 12 22 24 0 3 3 8 15 4 4 0 1 N N Y Y	H8K2 2 5 12 22 24 1 3 3 8 15 5 4 0 2 N N Y	E15K1 2 1 8 12 14 2 3 2 8 1 2 1 2 4 2 N N N	N1K1 0 0 0 3 5 5 2 3 2 10 1 4 2 5 2 N N Y N	N1K1J 0 0 4 5 7 3 3 2 10 1 5 3 6 4 N H(Y) N	N1K2J 0 0 3 5 7 3 3 2 10 4 5 3 6 4 N N(Y) N	Q1W1 2 2 6 6 8 0 1 3 7 4 1 2 2 2 N N N N	A5M4 0 0 0 3 4 6 6 2 3 3 3 9 1 1 2 2 6 1 N Y N N	G3M2 1 4 9 13 16 1 3 3 7 6 2 1 1 0 N N N	G3H3 1 4 9 16 21 2 3 2 8 6 2 1 1 1 1 N N
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N	H8K1 2 5 12 22 24 0 3 3 3 8 15 4 4 0 1 N V V V N(Y)	H8K2 2 5 12 22 24 1 3 3 8 15 5 4 0 2 N N Y Y Y N(Y)	E15K1 2 1 8 12 14 2 3 2 8 1 2 1 2 4 2 N N N N N	N1K1 0 0 3 5 5 2 3 2 10 1 4 2 5 2 N N N N	NIK1J 0 0 4 5 7 3 3 2 10 1 5 3 6 4 N N(Y) N N N	N1K2J 0 0 3 5 7 3 3 2 10 4 5 3 6 4 N N(Y) N N	Q1\(\mathbb{H}\)1 \\ 2 \\ 2 \\ 6 \\ 6 \\ 8 \\ 0 \\ 1 \\ 3 \\ 7 \\ 4 \\ 1 \\ 2 \\ 2 \\ N \\ N \\ N \\ N \\ N	A5M4 0 0 3 4 6 2 3 3 3 9 1 2 2 6 1 N Y N N N	G3H2 1 4 9 13 16 1 3 3 7 6 2 1 1 0 N N N N N	G3H3 1 4 9 16 21 2 3 2 8 6 2 1 1 1 1 N N N N N
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N	H8K1 2 5 12 22 24 0 3 3 3 8 15 4 4 0 1 N N Y Y N(Y) SURSIE	H8K2 2 5 12 22 24 1 3 3 8 15 5 4 0 2 N N Y Y N(Y)	E15K1 2 1 8 12 14 2 3 2 8 1 1 2 4 2 N N N N N N N WAL	N1K1 0 0 3 5 5 2 3 2 10 1 4 2 5 2 N N N N N N N N	MIKIJ 0 0 4 5 7 3 3 2 10 1 5 3 6 4 N H(Y) N N N N	MIK2J 0 0 3 5 7 3 3 2 10 4 5 3 6 4 N H(Y) N N N	Q1\(\mathbf{H}\)1 \\ 2 \\ 2 \\ 6 \\ 6 \\ 8 \\ 0 \\ 1 \\ 3 \\ 7 \\ 4 \\ 1 \\ 2 \\ 2 \\ N \\ N \\ N \\ N \\ Y \\ \ - \\ \ \ \ \ \ \ \ \ \ \ \ \	A5M4 0 0 3 4 6 2 3 3 9 1 2 2 6 1 N Y N N N N N N N N N N N N N N N N N	G3H2 1 4 9 13 16 1 3 3 7 6 2 1 1 0 N N N N N N N N N N N N N	G3H3 1 4 9 16 21 2 3 2 8 6 2 1 1 1 N N N N N N N N N N N N N
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE \$ TYPE	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N Y/N (5)	H8K1 2 5 12 22 24 0 3 3 3 8 15 4 4 0 1 N N Y Y Y N(Y) SURSIE D1A2	H8K2 2 5 12 22 22 1 3 3 3 8 15 5 4 0 2 4 0 7 Y Y Y N(Y)	E15K1 2 1 8 12 14 2 3 2 8 1 1 2 4 2 N N N N N N N N UAL 03A2	N1K1 0 0 3 5 5 2 3 2 10 1 4 2 5 2 N N N N N N SMMCE E13A1	N1K1J 0 0 4 5 7 3 3 2 10 1 5 3 6 4 N H(Y) N N N N PAUL E16A1	N1K2J 0 0 3 5 7 3 3 2 10 4 N N(Y) N N N N N N N N N N N N N N N N N N N	01W1 2 2 6 6 8 0 1 3 7 4 1 2 2 2 N N N N N N N H H H H H H H H H H H H	A5M4 0 0 3 4 6 2 3 3 9 1 2 2 6 1 N Y N N N N N N E7K2	G3H2 1 4 9 13 16 1 3 3 7 6 2 1 1 0 N N N N N	G3H3 1 4 9 16 21 2 3 2 8 6 2 1 1 1 1 N N N N N
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE \$ TYPE ROLE	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N O-63 (5) 0-2	H8K1 2 5 12 22 24 0 3 3 8 15 4 4 0 1 N N Y Y N(Y) SURSIE D1A2 1	H8K2 2 5 12 22 24 1 3 3 3 8 15 5 4 0 2 V V V V V V V V V V V V V V V V V V	E15X1 2 1 1 8 12 14 2 3 2 8 1 2 1 2 1 2 4 2 N N N N N N N N N N N N N N N N N	N1K1 0 0 3 5 5 5 2 3 2 10 1 4 2 5 2 N N N N SMRE E13A1 2	N1K1.J 0 0 4 5 7 3 3 2 10 1 5 3 6 4 N N(Y) N N N N PMIL E1561	N1K2J 0 0 3 5 7 3 3 2 10 4 5 3 6 4 N N(Y) N N N N N N N N 10 SPACE B7A2	Q1W1 2 2 2 6 6 6 8 8 0 1 3 3 7 4 1 1 2 2 2 M M M M M M M M M M M M M M M	A5M4 0 0 3 4 6 6 2 3 3 3 9 1 1 2 2 2 6 1 N N N N N N N N N N N N N N N N N N	G3H2 1 4 9 13 16 1 3 3 7 6 N N N N N HMWIS H6K4	G3H3 1 4 9 16 21 2 3 2 8 6 2 1 1 1 N N N N N N HAW/IS H6K5
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE \$ TYPE ROLE CREW	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N O-63 (5) 0-2 0-5	H8K1 2 5 5 12 22 24 0 3 3 3 8 15 4 4 0 1 1 N N N Y Y N N Y Y N N Y Y D D D D D D D	H8K2 2 5 12 22 24 1 3 3 3 8 15 5 4 0 2 V V V V V V V V V V V V V V V V V V	E15K1 2 1 1 8 12 14 2 2 3 2 3 2 4 1 1 2 4 2 1 1 2 4 2 N N N N N WAL 03A2 1	NIK1 0 0 0 3 5 5 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 3 2 2 3 2 2 3 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 2	NIKIJ 0 0 0 0 4 5 7 3 3 2 10 10 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N1K2J 0 0 0 0 0 3 5 7 3 3 2 10 4 5 3 6 4 N N N N N N N N N N N N N N N N N N	0191 2 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	RSH4	G3M2 1 4 9 13 14 3 3 7 6 2 1 1 0 N N N N HMIS H6K4 2 5	G3H3 1
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE TYPE ROLE CREW RANGE (N,E,T)	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N (5) 0-2 0-5 0-63	H8K1 2 5 5 12 22 24 0 3 3 3 8 15 15 18 10 18 17 19 18 18 18 18 18 18 18 18 18 18 18 18 18	H8K2 2 5 5 12 22 22 11 3 3 3 6 15 5 4 0 2 2 7 7 Wh(Y) WAL D3A1 1 1 5 6 6 6 6 6 6 6 7 7 8 7 8 7 8 7 8 7 8 7 8	E15X1 2 1 8 12 1a 8 12 1a 2 3 2 8 1 1 1 2 2 3 2 N N N N V N N N 1 1 2 3 2 3 2 1 1 5 6 7 5 6 7 5 6	NIK1 0 0 3 5 5 5 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 2 2 2 2 7 1 3 1 3 1 2 2 2 2 7 1 3 1 3 1 2 2 2 2 7 1 3 1 3 1 2 2 2 2 2 7 1 3 1 3 1 3 2 3 2 3 2 3 3 2 3 3 2 3 3 2 3 3 2 3 3 2 3 3 2 3 3 2 3 3 2 3 3 2 3 3 2 3 3 3 2 3	NIX.1J 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	NIX2J 0 0 0 3 5 7 3 3 1 2 10 4 5 3 6 4 N N(Y) N N N 1 1 GRACE 67A2 1 1 7 5 7 8	Q1W1 2 2 5 6 6 8 6 0 1 3 3 1 2 2 2 1 2 2 2 1 1	ASH4 0 0 0 3 4 6 6 2 3 3 9 1 2 2 6 1 N Y N N N N N CALF ETX2 2 2 5 5 7 7	G3M2 1 4 9 13 16 1 3 3 7 6 6 2 1 1 1 0 N N N N N N N S H6K4 2 5 036 25 25	G3H3 1
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPL ANE TORPEDO NIGHT ANTI-SUB PLANE \$ TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L)	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N 0-63 (5) 0-2 0-5 0-3 0-7 0-7	H8K1 2 5 5 12 22 24 0 3 3 3 6 15 5 4 6 0 1 1 N N Y Y Y Y N(YY) SUSSIE DIA2 1 1 4 5 5 0 0 2 3 3	H8K2 2 5 5 12 22 22 11 3 3 3 6 15 5 4 0 2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	E15X1 2 1 0 12 1a 2 3 2 0 1 1 12 1a 1 12 1a 1 N N N N Val 1 03A2 1 1 1 6 6 7 5 3 3 3 2	NIK1 0 0 3 5 5 2 3 2 10 1 1 4 2 5 2 N N N N N N N N N N N N N N N N N	NIX.1J 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	NHX2J 0 0 0 3 5 7 3 3 2 10 4 5 3 6 4 N N(Y) N N N 1 1 1 1 1 1 1 5 7 5 7 8 8 3 3 2 2	Q1W1 2 2 5 6 6 8 6 0 1 3 3 1 2 2 2 1 2 2 2 1 1	ASH4 0 0 0 3 4 6 6 2 3 3 9 1 2 2 6 1 N Y N N N N N CALF ETX2 2 2 5 5 7 7	G3M2 1 4 9 13 16 1 3 3 7 6 6 2 1 1 1 0 N N N N N N N S H6K4 2 5 036 25 25	G3M3 1 4 9 16 21 2 3 2 8 6 7 1 1 1 1 N N N N N N N N N N N N N
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPL ANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N 0-63 (5) 0-2 0-3 0-3 0-3 0-15	H8K1 2 5 12 22 24 24 0 3 3 3 8 8 15 15 15 14 6 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	H8K2 2 5 5 12 22 24 1 3 3 8 8 15 5 4 0 1 7 Y Y Y Y N(Y) 4AL 1 1 5 6 6 2 3 1 8	E15X1 2 1 8 12 14 2 3 2 3 2 3 2 4 4 4 4 4 4 4 4 4	N1K1 0 0 13 5 5 5 2 3 2 10 1 10 1 4 2 5 2 N N N N N N N N N N N N N N N N N N N	NIX.1J 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	NIX2J 0 0 0 3 5 7 3 3 1 2 10 4 5 3 6 4 N N(Y) N N N 1 1 GRACE 67A2 1 1 7 5 7 8	Q1W1 2 2 5 6 6 8 6 0 1 3 3 1 2 2 2 1 2 2 2 1 1	ASH4 0 0 3 4 6 2 3 3 9 1 2 2 6 1 N Y N N N N S ALF ET/K2 2 2 5 5 7 1 1 5 0 2 2 2	G3M2 1 4 9 13 16 1 3 3 7 6 6 2 1 1 1 0 N N N N N N N S H6K4 2 5 036 25 25	G3HS 1 4 9 16 21 2 3 2 8 6 6 2 1 1 1 N N N N H6KS 2 5 7 14 24 26 2 3 24 26 2 4 24 26 2 5 26
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE \$ TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N 0-63 (5) 0-2 0-5 0-3 0-15 0-63	H8K1 2 5 12 22 24 24 20 3 3 3 8 15 15 4 4 0 1 15 N N Y Y Y Y N(Y) SURSIE 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	H8K2 2 5 12 22 24 1 3 3 6 15 5 4 0 2 7 N N Y Y Y N(Y) WAL 1 1 1 5 6 6 6 2 3 3 3	E15K1 2 1 8 12 14 2 3 2 3 2 1 1 1 1 1 1 2 1 1	NHK1 0 0 13 5 5 5 2 3 2 10 10 1 4 2 5 2 N N N N N N 2 2 2 7 13 1 1 3 3 3	NIX.1J 0 0 0 4 5 7 7 3 3 2 10 10 1 5 3 6 4 N(Y) N N N PMUL E16A1 2 1 5 4 5 7 2 2 2 2	NHX2J 0 0 0 3 5 7 7 8 8 8 9 10 0 4 10 0 0 4 10 0 0 4 10 0 0 0 4 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0191 2 2 6 6 8 8 0 1 3 3 7 4 1 2 2 2 8 1 1 2 2 2 1 1 1 2 1 2 2 2 1 1 1 1	ASHA 0 0 3	G3M2 1 4 9 13 11 3 3 7 6 2 1 1 1 N N N N N N N N O O O O O	G3HS 1 4 9 16 21 2 3 2 8 6 2 1 1 1 1 N N N N N HMWIS 2 2 7 14 24 26 2 3 2 7 6
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P)	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N 0-63 (5) 0-2 0-3 0-3 0-15 0-63 0-7	H8K1 2 5 12 22 24 24 20 3 3 3 8 15 15 4 4 0 1 15 17 17 17 17 17 17 17 17 17 17 17 17 17	H8K2 2 5 12 22 24 1 3 3 8 15 5 4 0 1 7 Y Y N(Y) WAL D3A1 1 1 5 6 6 6 3 3 2 2 2 5 5	E15K1 2 1 8 12 1 12 0 2 1 1 2 3 2 1 1 2 3 2 1 1 2 0 2 1 1 2 0 2 1 1 2 0 2 1 1 2 0 2 1 1 1 0 0 0 1 1 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 1 0 0 0 0 1 0	NHK1 0 0 0 1 5 5 5 2 3 2 3 2 10 1 1 4 2 5 2 1 10 N N N N N N N N N N N N N N N N N N N	NIX.1J 0 0 0 1 5 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	N1K2J 0 0 0 3 5 7 7 8 8 10 10 10 10 10 10 10 10 10 10 10 10 10	01M1 2 2 2 6 6 6 8 6 7 7 11 2 4 4 5 5 7 11 2 4 4 5 7 11 2 4 4 5 7 11 2 4 7	ASMA O O O S A A A B A A B A A B A A A	G3M2 1 4 9 13 11 3 3 7 6 2 1 1 1 0 N N N N N N T HMMIS 46625 2 3 2 3 6 6 8 8 8 8	G3HS 1 4 9 16 22 3 2 8 6 6 2 1 1 1 N N N N N N HWIS 5 14 24 26 2 7 8 8 15 3 3 0 0
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE \$ TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED	(5) 0-2 0-5 0-31 0-15 0-63 0-17 Y/N Y/N Y/N Y/N Y/N Y/N 0-63 (5) 0-2 0-3 0-7 Y/N Y/N Y/N Y/N Y/N Y/N Y/N Y/N	H8K1 2 5 12 22 24 0 3 3 3 6 6 15 15 14 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	H8K2 2 5 12 22 22 21 3 3 8 15 5 4 0 2 7 7 7 7 7 7 7 7 7	E15K1 2 1 3 12 10 8 12 10 1 12 10 1 12 10 1 17 1 17 1 18 1 18 1 18 1 18 1 18 1 18	NHK1 0 0 3 5 5 5 2 3 2 3 2 10 10 1 4 2 5 2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	NIK.1.3 0 0 0 1 1 1 5 3 6 8 N N N(Y) N N N 1 1 5 4 5 7 2 2 3 3 4 2 9 9 2 3 3 3 8 N	NIX2J 0 0 0 3 5 7 7 3 3 2 10 4 5 3 6 8 N N(Y) N N N 1 1 5 7 8 7 8 8 7 8 1 1 5 7 8 8 7 8 1 1 1 5 7 8 8 7 8 1 1 1 1 5 7 8 8 7 8 1 1 1 1 6 8 7 8 1 1 1 1	01W1 2 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	ASMA O O O S A A A B A A B A A B A A B A B A B A B A B A B B	G3M2 1 4 9 13 16 1 3 3 1 3 3 6 0 6 0 3 3 0 0 N	G3HS 1 4 9 16 21 2 3 2 8 6 6 6 2 1 1 1 1 N N N N N N N N N N 1 N N N N N
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N 0-63 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N 0-7 0-7 0-7 0-7 0-7 0-7 0-7 0-7 0-7 0-7	H8K1 2 5 12 22 24 0 3 3 3 0 0 15 15 15 17 17 17 17 17 17 17 17 17 17 17 17 17	H8K2 2 5 12 22 22 22 1 3 3 3 8 15 5 4 0 2 7 N N Y Y Y Y N(Y) WALL 5 6 6 6 6 6 7 2 3 3 2 7 N Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	E15K1 2 1 3 12 10 8 12 10 1 12 10 1 12 10 1 12 10 1 10 1 10	NHK1 0 0 0 3 5 5 5 2 3 2 3 2 2 10 1 4 2 5 2 N N N N N N N N N N N N N N N N N N N	NIX.1.3 0 0 0 1 1 3 3 2 10 1 5 3 6 N N N(Y) N N N 1 1 2 1 1 2 1 1 2 1 1 1 1 1 1 1 1	NIX2J 0 0 0 3 5 7 3 3 2 10 4 5 3 6 8 N N(Y) N N N 1 1 5 7 8 8742 1 1 1 1 5 7 8 8 3 3 2 10 6 1 3 3 8 1 N Y	01M1 2 2 2 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	ASMA 0 0 3 4 6 6 2 3 3 9 1 2 2 6 1 N Y N N N N ALF E7X2 2 2 5 5 7 1 5 0 2 2 5 1 2 2 2 3 1 N N N	G3M2 1	G3HS 1 4 9 16 21 2 3 2 2 3 2 6 6 6 2 1 1 1 1 N N N N N HHWTS 2 5 14 24 24 2 3 2 7 6 3 3 3 0 N N N
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE \$ TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N 0-63 (5) 0-2 0-3 0-3 0-15 0-63 0-15 0-63 0-17 Y/N	H8K1 2 5 12 22 24 0 3 3 3 6 6 7 14 16 17 16 17 16 17 17 17 17 17 17 17 17 17 17 17 17 17	H8K2 2 5 12 22 22 1 3 3 3 6 15 15 16 6 6 2 3 1 2 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1	E15K1 2 1 8 12 14 2 3 2 8 11 1 12 14 1 12 14 1 17 1 17 1 17 1 17 1 17 1 17 1 17 1	NHK1 0 0 0 3 5 5 5 2 3 2 3 2 10 1 4 2 5 2 8 N N N N N N N N N N N N N N N N N N N	NIK.1J 0 0 0 1 1 5 7 3 3 2 10 1 5 3 6 8 N N(Y) N N N 1 2 5 4 5 7 3 2 2 2 3 3 3 8 N N N N N N N N N N N N N N N N N N N	N1K2J 0 0 3 5 7 7 8 8 7 8 8 7 8 8 8 8 8 8 8 8 8 8 8	01M1 2 2 2 6 6 6 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	ASMA 0 0 3 4 6 6 2 3 3 9 1 2 2 6 1 N Y N N N N ALF ETK2 2 2 2 5 5 7 1 5 0 2 2 5 5 7 1 2 2 2 3 3 N N N Y	G3M2 1 4 9 13 14 1 3 3 7 7 6 2 1 1 1 0 N N N N N M N M N M N M M N M N M N M	G3HS 1 4 9 16 21 2 3 2 0 6 6 2 1 1 1 N N N N N N Y PWWTS 2 5 7 14 24 26 2 3 2 7 6 6 5 3 3 0 0 N N N N N N N N N N N N N N N N N N
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPL ANE TORPEDO NIGHT ANTI-SUB PLANE \$ TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N O-63 (5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N	H8K.1 2 5 12 22 24 0 3 3 3 6 15 14 4 0 1 1 14 5 5 5 0 2 3 6 3 2 1 6 6 1 7 1	H8K2 2 5 12 22 22 1 3 3 3 8 15 5 4 0 2 7 N N (Y) WALL 1 1 1 5 6 6 8 3 3 2 2 2 5 N N N N N N N N N N N N N N N N	E15K1 2 1 8 12 14 2 3 2 8 11 N N N VAL 03A2 1 1 1 6 6 7 5 3 3 2 8 8 3 0 2 2 5 5 N N N	NHK1 0 0 0 1 3 5 5 5 2 3 2 10 1 4 2 5 2 1 N N N N SMICE 2 2 7 13 1 3 1 6 2 2 1 2 3 N N N N N N N N N N N N N N N N N N N	NIX.1J 0 0 0 1 5 7 7 3 3 2 10 1 5 3 6 8 N N N N N N N N N N N N N N N N N N N	N1X2J 0 0 0 3 5 7 7 8 8 10 N N N N N N N N N N N N N N N N N N N	O1W1 2 2 2 6 6 6 6 6 6 6	ASMA 0 0 1 3 4 6 6 1 2 3 3 9 1 2 2 6 1 N N N N ALF ETX2 2 2 3 0 2 3 5 1 1 5 1 1 N N N N N N N N N N N N N	G3M2 1 4 9 13 11 3 3 7 6 2 1 1 1 N N N N M M M M M M M M M M M M M M M	G3HS 1 4 9 16 21 2 3 2 0 6 2 1 1 1 N N N N W HMWIS 5 7 16 22 2 3 2 7 6 0 3 3 0 0 N N N N N N N N N N N N N
TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE \$ TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE	(5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N 0-63 (5) 0-2 0-3 0-3 0-15 0-63 0-15 0-63 0-17 Y/N	H8K1 2 5 12 22 24 0 3 3 3 6 6 7 14 16 17 16 17 16 17 17 17 17 17 17 17 17 17 17 17 17 17	H8K2 2 5 12 22 22 1 3 3 3 6 15 15 16 6 6 2 3 1 2 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1	E15K1 2 1 8 12 14 2 3 2 8 11 1 12 14 1 12 14 1 17 1 17 1 17 1 17 1 17 1 17 1 17 1	NHK1 0 0 0 3 5 5 5 2 3 2 3 2 10 1 4 2 5 2 8 N N N N N N N N N N N N N N N N N N N	NIK.1J 0 0 0 1 1 5 7 3 3 2 10 1 5 3 6 8 N N(Y) N N N 1 2 5 4 5 7 3 2 2 2 3 3 3 8 N N N N N N N N N N N N N N N N N N N	N1K2J 0 0 3 5 7 7 8 8 7 8 8 7 8 8 8 8 8 8 8 8 8 8 8	01M1 2 2 2 6 6 6 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	ASMA 0 0 3 4 6 6 2 3 3 9 1 2 2 6 1 N Y N N N N ALF ETK2 2 2 2 5 5 7 1 5 0 2 2 5 5 7 1 2 2 2 3 3 N N N Y	G3M2 1 4 9 13 14 1 3 3 7 7 6 2 1 1 1 0 N N N N N M N M N M N M M N M N M N M	G3HS 1 4 9 16 21 2 3 2 0 6 6 2 1 1 1 N N N N N N Y PWWTS 2 5 7 14 24 26 2 3 2 7 6 6 5 3 3 0 0 N N N N N N N N N N N N N N N N N N

PLANE #	0-63	HYRT	HYRT	GLEN	JUDY	JUDY	JUDY	JUDY	JUDY	FRAN	FRAN
TYPE	(5)	C6NI	CENIS	E14Y1	D4Y1	D4Y1C	D4Y2	D4Y2C	D4Y2S	P1Y1	P1Y2S
ROLE	0-2	2	0	2	1	2	1	2	0	1	0
CREW	0-5	2	1	1	1	1	1	1	1	2	2
RANGE (N,E,T)		-	-	4 6 6	4 8 9		4 7 8	7 7 8	6 6 7	6 11 14	8 8 10
ALTIT (H,M,L)	0 0 0	-	3 3 2	0 2 3	2 3 3		3 3 3	3 3 3	3 3 3	2 3 2	2 3 3
CRUISING SPEED	0-15	11	11	5	12	12	12	12	12	10	10
BOMB LOAD	0-63	0	0	1	3	0	5	0	0	8	0
CHAR (F,V,M,P)	0-7		3 2 4 5	1 1 5 0	2 2 5 3	2 2 5 4	2 2 5 4	2 2 5 4	3 2 5 4	1333	3 3 3 3
ALLIED	Y/N	N	N	N	N	N	N	N	N	N	N
CARRIER	Y/N	N	N	н	Y	Y	Y	Y	N	N	N
SEAPLANE	Y/N	н	N	Y	N	N	N	N	N	N	N
TORPEDO	Y/N	N	N	N	N	н	N	N	N	Y	N
NIGHT	Y/N	Y	Y	N	N	N	N	N	Y	N	Y
ANTI-SUB	Y/N	N	N	N	N	N	N	N	N	N	N
										-	
PLANE 8	0-63	PERRY	HMRY	HICK	HICK	LILY	LILY	TONY	TONY	-	RANDY
TYPE	(5)	Ki10	Ki32	Ki45A	Ki45C	Ki48A	K1488	Ki61	Ki61K	Ki100	Ki102
ROLE	0-2	0	1	0	0	1	1	0	0	0	0
CREW	0-5	0	1	1	1	3	3	0	0	0	1
RANGE (N,E,T)	0-31	4 4 6			5 5 5	-	3 8 8	2 2 4	2 4 6	3 5 6	4 7 9
ALTIT (H,M,L)	0-3		1 3 3		2 3 2	2 3 3	2 3 3	3 3 3	2 3 3	3 3 2	2 3 2
CRUISING SPEED	0-15 7 0-63 0		8	10	10	9	10	11	11	11	12
BOMB LOAD	0-15 7 0-63 0		4	4	0	3	6	0	4	4	4
CHAR (F,V,M,P)	0-63 0 0-7 2 1 6 1 1				4 3 4 3					_	-
ALLIED	Y/N	И	н	н	н	N	N	N	N	н	н
CARRIER	Y/N	N(Y)	H(Y)	н	н	н	N	N	N	н	н
SEAPLANE	Y/N	N	N	н	н	N	N	N	N	N	N
TORPEDO	Y/N	N	N	н	N	И	N	N	N	N	N
NIGHT	Y/N	N	N	N	Y	N	N	H	N	н	N
ANTI-SUB	Y/N	н	н	н	н	н	н	н	N	н	н
ANTI-SUB	Y/N 0-63	RANDY	BABS	н -	SWITTA	SWILLY	H	DIMAH	DIMAH	N	PEGGY
			_	N - Kai							
PLANE \$	0-63	RANDY	BABS	-	SALLY	SALLY	Med	DIMAH	DIMMH	SUNIA	PEGGY
PLANE \$ TYPE	0-63	RANDY K102C	BABS Ki15	- Kai	SALLY Ki21A	SALLY Ki21B	ANN Ki30	DIMAH Ki46	DIMAH K146K	SUNIA Ki51	PEGGY K167
PLANE \$ TYPE ROLE	0-63 (5) 0-2	RANDY K102C	BABS Ki15	- Kai 2	SALLY Ki21A	SALLY Ki21B 1 3(4)	## Ki30 1 1	DIMAH Ki46	DIMMH Ki46K 0 1	SUNIA Ki51	PEGGY Ki67 1
PLANE & TYPE ROLE CREW	0-63 (5) 0-2 0-5	RANDY K102C 0 1	BABS Ki15 2	- Kai 2	SALLY Ki21A 1 3(4) 5 8 10	SALLY Ki21B 1 3(4)	## Ki30 1 1	DIMAH Ki46 2	DIMMH Ki46K 0 1	SUNIA Ki51 1	PEGGY Ki67 1 4 5 9 1
PLANE \$ TYPE ROLE CREW RANGE (N,E,T)	0-63 (5) 0-2 0-5 0-31	RANDY K102C 0 1 7 7 7	BABS Ki15 2 1 10 10 12	- Ked 2 0 2 2 3	SALLY Ki21A 1 3(4) 5 8 10	SALLY Ki21B 1 3(4) 5 8 10	Ki30 1 1 5 5 7	DIMMH Ki46 2 1 6 6 8	DINMH Ki46K 0 1 5 5 8	SUNIA Ki51 1 1 4 4 6	PEGGY Ki67 1 4 5 9 1
PLANE \$ TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L)	0-63 (5) 0-2 0-5 0-31 0-3	RANEDY K102C 0 1 7 7 7 7 3 3 1 12 0	BMBS Ki15 2 1 10 10 12 3 3 3 3 9 0	- Kai 2 0 2 2 3 3 0 1 3 3 0	SALLY Ki21A 1 3(4) 5 8 10 1 3 3 9 8	SALLY Ki21B 1 3(4) 5 8 10 2 3 3 10 8	Ki30 1 1 5 5 7 1 3 3 10 3	DIMAH Ki46 2 1 6 6 8 3 3 2 11	DINMH Ki46K 0 1 5 5 8 3 3 2 11 0	SOMIA Ki51 1 4 4 6 1 3 3 10 2	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED	0-63 (5) 0-2 0-5 0-31 0-3 0-15	RANEDY K102C 0 1 7 7 7 7 3 3 1 12 0	BMBS Ki15 2 1 10 10 12 3 3 3 3 9 0	- Kai 2 0 2 2 3 3 0 1 3 3 0	SALLY Ki21A 1 3(4) 5 8 10 1 3 3	SALLY Ki21B 1 3(4) 5 8 10 2 3 3 10 8	Ki30 1 1 5 5 7 1 3 3 10 3	DIMAH Ki46 2 1 6 6 8 3 3 2 11	DINMH Ki46K 0 1 5 5 8 3 3 2 11 0	SOMIA Ki51 1 4 4 6 1 3 3 10 2	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD	0-63 (5) 0-2 0-5 0-31 0-3 0-15 0-63	RANEDY K102C 0 1 7 7 7 7 3 3 1 12 0	BMBS Ki15 2 1 10 10 12 3 3 3 3 9 0	- Kai 2 0 2 2 3 3 0 1 3 3 0	SALLY Ki21A 1 3(4) 5 8 10 1 3 3 9 8	SALLY Ki21B 1 3(4) 5 8 10 2 3 3 10 8	Ki30 1 1 5 5 7 1 3 3 10 3	DIMAH Ki46 2 1 6 6 8 3 3 2 11	DINMH Ki46K 0 1 5 5 8 3 3 2 11 0	SOMIA Ki51 1 4 4 6 1 3 3 10 2	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P)	0-63 (5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7	RANDY K102C 0 1 7 7 7 7 7 3 3 1 1 12 0 4 4 4 5	BABS Ki15 2 1 10 10 10 12 3 3 3 9 0 1 2 5 3	- Ka1 2 0 2 2 3 0 1 3 3 0 0 1 7 0	SMLY Ki21A 1 3(4) 5 8 10 1 3 3 9 8 2 1 2 1 2 1	SMLY Ki21B 1 3(4) 5 8 10 2 3 3 10 8 3 2 2 2	Ki30 1 5 5 7 1 3 3 10 3 1 2 4 1	01Mail	DINMH Ki46K 0 1 5 5 8 3 3 2 11 0 3 3 4 5	SINIA Ki51 1 4 4 6 1 3 3 10 2 2 2 2 5 1	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6 3 4 2
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED	0-63 (5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N	RANDY K102C 0 1 7 7 7 7 3 3 1 12 0 4 4 4 5	BABS Ki15 2 1 10 10 12 3 3 3 3 9 0 1 2 5 3 N	- Ke1 2 0 2 2 3 3 0 1 3 3 0 0 1 7 0 N	SALLY Ki21A 1 3(4) 5 8 10 1 3 3 9 8 2 1 2 1	SALLY Ki21B 1 3(4) 5 8 10 2 3 3 10 8 3 2 2 2 N	Ki30 1 1 5 5 7 1 3 3 10 3 1 2 4 1 N	DIMAH Ki46 2 1 6 6 8 3 3 2 11 0 1 2 4 4	DIMMH Ki46K 0 1 5 5 8 3 3 2 11 0 3 3 4 5	SINIA Ki51 1 4 4 6 1 3 3 10 2 2 2 5 1 N	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6 3 4 2
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER	0-63 (5) 0-2 0-5 0-31 0-15 0-63 0-7 Y/N	RANDY K102C 0 1 7 7 7 7 3 3 1 12 0 4 4 4 5 N	BABS Ki15 2 1 10 10 12 3 3 3 3 9 0 1 2 5 3 N N(Y)	- Kal 2 0 1 3 0 1 3 0 0 1 7 0 N N(Y)	SALLY KiZIA 1 3(4) 5 8 10 1 3 3 9 8 2 1 2 1 N N	SALLY Ki21B 1 3(4) 5 8 10 2 3 3 10 8 3 2 2 2 N	Ki30 1 1 5 5 7 1 3 3 10 3 1 2 4 1 N	DIMAH Ki46 2 1 6 6 8 3 3 2 11 0 1 2 4 4 N	DIMMH Ki46K 0 1 5 5 8 3 3 2 11 0 3 3 4 5 N	SUNIA Ki51 1 4 4 6 6 1 3 3 10 2 2 2 2 5 1 N	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6 3 4 2
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE	0-63 (5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N	RANDY K102C 0 1 7 7 7 7 3 3 1 12 0 4 4 4 5 N	BABS Ki15 2 1 10 10 12 3 3 3 3 9 0 1 2 5 3 N N(Y)	- Kal 2 0 2 3 0 1 3 3 0 0 1 7 0 N N(Y) N	SALLY Ki21A 1 3(4) 5 8 10 1 3 3 9 8 2 1 2 1 N N	SALLY Ki21B 1 3(4) 5 8 10 2 3 3 10 8 3 2 2 2 N N	Ki30 1 1 5 5 7 1 3 3 10 3 1 2 4 1 N N	DIMAH Ki46 2 1 6 6 8 3 3 2 11 0 1 2 4 4 N N	DIMMH Ki46K 0 1 5 5 8 3 3 2 11 0 3 3 4 5 N N	SUNIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6 3 4 2
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO	0-63 (5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N	RAMEDY K102C 0 1 7 7 7 7 3 3 1 12 0 4 4 4 5 N N N	BABS Ki15 2 1 10 10 10 13 3 3 9 0 12 5 3 N N(Y) N	- Ked 2 0 1 3 3 0 1 7 0 N N(Y) N N	SALLY Ki21A 1 3(4) 5 8 10 1 3 3 9 8 2 1 2 1 2 1 N N N	SNLY Ki21B 1 3(4) 5 8 10 2 3 3 10 8 3 2 2 2 N N N	Ki30 1 1 5 5 7 1 3 3 10 3 1 2 4 1 N N	DIMMH Ki46 2 1 6 6 8 3 3 2 11 0 1 2 4 4 N N	DIMMH Ki46K 0 1 5 5 8 3 3 2 11 0 3 3 4 5 N N N	SUNIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB	0-63 (5) 0-2 0-5 0-31 0-15 0-63 0-7 Y/N Y/N Y/N Y/N	RANDY K102C 0 1 7 7 7 7 3 3 1 12 0 4 4 4 5 N N N N	BABS Ki15 2 1 10 10 12 3 3 3 3 9 0 1 2 5 3 N N(Y) N N	- Ked 2 0 2 2 3 3 0 1 3 3 0 0 1 7 0 N N(Y) N N N N N N N N N N N N N N N N N N N	SALLY Ki21A 1 3(4) 5 8 10 1 3 3 9 8 2 1 2 1 N N N N	SNLY Ki21B 1 3(4) 5 8 10 2 3 3 10 8 3 2 2 2 N N N	Ki30 1 1 5 5 7 1 3 3 10 3 1 2 4 1 N N N	DIMMH Ki46 2 1 6 6 8 3 3 2 11 0 1 2 4 4 N N N	DIMMH Ki46K 0 1 5 5 8 3 3 2 11 0 3 3 4 5 N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE &	0-63 (5) 0-2 0-5 0-31 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N Y/N	RANDY K102C 0 1 7 7 7 7 3 3 1 12 0 4 4 4 5 N N N N N N	BMBS Ki15 2 1 10 10 12 3 3 3 9 0 1 2 5 3 N N(Y) N N	- Ka1 2 0 2 3 0 1 3 3 0 0 1 7 0 N N(Y) N N N Y	SMLY Ki21A 1 3(4) 5 8 10 1 3 3 9 8 2 1 2 1 2 1 N N N N N	SALLY Ki21B 1 3(4) 5 8 10 2 3 3 10 8 3 2 2 2 N N N N	Ki30 1 1 5 5 7 1 3 3 10 3 12 4 1 N N N N	DIMMH Ki46 2 1 6 6 8 3 3 2 11 0 1 2 4 4 N N N	DIMMH Ki46K 0 1 5 5 8 3 3 2 11 0 3 3 4 5 N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE	0-63 (5) 0-2 0-5 0-31 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N Y/N Y/N (5)	RANDY K102C 0 1 7 7 7 7 3 3 1 12 0 4 4 4 5 N N N N N N N N N N N N N N N N N N N	BMBS Ki15 2 1 10 10 12 3 3 3 3 9 0 1 2 5 3 N N(Y) N N N OSCAR		SMLY Ki21A 1 3(4) 5 8 10 1 3 3 9 8 2 1 2 1 2 1 N N N N N N N N N N N N N N N N N N N	SMLY Ki21B 1 3(4) 5 8 10 2 3 3 10 8 3 2 2 2 N N N N N N HELEN	### Ki30 1 1 3 3 10 3 10 N N N N N N N N N N N N N N N N N N	DIMMH Ki46 2 1 6 6 8 3 3 2 11 0 1 2 4 4 N N N N N N	DIMMH Ki46K 0 1 5 5 8 3 3 2 11 0 3 3 4 5 N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE	0-63 (5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N Y/N O-63 (5)	RANDY K102C 0 1 7 7 7 7 3 3 1 12 0 0 4 4 4 5 N N N N N N N N N N N N N N N N N N N	BABS Ki15 2 1 10 10 10 13 3 3 3 9 0 1 2 5 3 N N(Y) N N OSCAR Ki33A	Ka1 2 0 2 2 3 3 0 1 3 3 0 0 1 7 0 N N(Y) N N N V COSCAR Ki438	SMLY Ki21A 1 3(4) 5 8 10 1 3 3 9 8 2 1 2 1 N N N N N N N N N Ki44	SALLY K1218	K130 1 1 5 5 7 1 3 3 10 3 1 2 4 1 N N N N N K184	DINMH Kida6 2 1 6 6 8 8 3 3 2 2 11 0 1 2 4 4 N N N N N N N N N N N N N N N N N N	DIMMH Ki46K 0 1 5 5 8 3 3 2 11 0 3 3 4 5 N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE CREW	0-63 (5) 0-2 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N O-63 (5) 0-2 0-5	ReadDY K102C	### BARS Ki15 2 1 10 10 12 13 3 3 3 9 9 10 12 5 5 3 N N(Y) N N N N N N N N N	Ka1 2 0 2 2 3 3 3 0 1 7 0 N N(Y) N N Y COSCAR Ki438 0 0 0	SMLIY	SALLY Ki21B 1 3(4) 5 8 10 0 6 5 8 10 0 6 10 10 10 10 10	Ki30	DINWH Ki46 2 1 6 6 8 8 3 3 2 11 0 1 2 4 4 N N N N N N N N N N O Ki115	DDWH K146K 0 1 1 5 5 8 8 3 3 2 11 0 0 N N N N N N N N N N N N N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE CREW RANGE (N,E,T)	0-63 (5) 0-2 0-3 0-31 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N 0-63 (5) 0-2 0-3 10-15	Revetty K102C	N	- Ka1 2 0 1 3 3 0 1 3 3 0 0 1 7 0 N N N(Y) N N N N V COSCAR K1438 0 0 0 2 5 7 7	SNLLY Ki21A 1 3(4) 5 8 10 1 3 3 9 6 2 1 2 1 2 1 N N N N N TOJO Ci44 0 0 0 3 3 4	SALLY Ki21B 1 3(4) 5 8 10 6 8 7 8 10	FRMEK F F F F F F F F F	DDWH Kia6 2 1 1 6 6 8 8 3 3 2 1 1 0 0 1 1 2 4 4 N N N N N N N N N N N N N N N N N	DDWH K186K 0 1 1 5 5 8 8 3 3 2 1 1 0 0 3 3 4 5 N N N N N N N N N N N N N N N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 : 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L)	0-63 (5) 0-2 0-3 0-31 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N Y/N 0-63 (5) 0-2 0-31 0-3	Revenue	N	- Ka1 2 0 1 3 3 0 1 3 3 0 0 1 7 0 N N N(Y) N N N N V COSCAR K1438 0 0 0 2 5 7 7	SNLLY	SALLY Ki21B 1 3(4) 5 8 10 6 8 7 8 10	N N N N N N N N N N	DDWH Kia6 2 1 1 6 6 8 8 3 3 2 1 1 0 0 1 1 2 4 4 N N N N N N N N N N N N N N N N N	DDWH K186K 0 1 1 5 5 8 8 3 3 2 1 1 0 0 3 3 4 5 N N N N N N N N N N N N N N N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 : 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE CREW RANGE (N,E,T)	0-63 (5) 0-2 0-5 0-31 0-15 0-63 0-7 Y/N Y/N Y/N Y/N 0-63 (5) 0-2 0-3 0-15	Reventy Reve	N		SALLY Ki21A 1 3 3 3 3 3 3 3 3 3	SALLY Ki21B 1 3(4) 5 8 10 6 2 3 3 10 6 3 2 2 2 N N N N N N N	FRMEK F F F F F F F F F	DDMH Kid6 2 1 6 6 8 8 3 3 2 11 0 1 2 4 4 N N N N N N N 1 2 4 3 3 3 2 11 3 3 3 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	DDWH K186K 0 1 1 5 5 8 8 3 3 2 1 1 0 0 3 3 4 5 N N N N N N N N N N N N N N N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 : 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD	0-63 (5) 0-2 0-5 0-31 0-3 0-15 0-63 7 Y/N Y/N Y/N Y/N Y/N 0-63 (5) 0-2 0-3 1 0-3 0-3 0-15 0-63 0-15 0-63	ReeDV K102C O	BNBS Ki15 2	- Kat 2 0 0 1 3 3 3 3 0 0 1 7 0 N N (Y) N N N Y Y COSCAR Ki438 0 0 2 5 7 3 3 3 12 4	SNLLY 1 3(4) 5 8 10 1 3 3 9 6 2 1 2 1 2 1 N N N N N TOJO 0 0 3 3 4 4 3 3 3 11	SPALLY S	Ki30	N	DDWH Kidek O 1 1 5 5 8 8 3 3 2 11 1 0 0 3 3 3 4 5 N N N N N N N N N N N N N N N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 : 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P)	0-63 (5) 0-2 0-5 0-31 0-3 0-7 Y/N Y/N Y/N Y/N Y/N 0-63 (5) 0-2 0-5 0-3 0-3 0-15	ReeDV K102C O	BNBS Ki15 2	- Kat 2 0 0 1 3 3 3 3 0 0 1 7 0 N N (Y) N N N Y Y COSCAR Ki438 0 0 2 5 7 3 3 3 12 4	SNLIY SNLI	SPALLY S	FRANK K S S S S S S S S	N	DDWH Kidek O 1 1 5 5 8 8 3 3 2 11 1 0 0 3 3 3 4 5 N N N N N N N N N N N N N N N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 : 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED	0-63 (5) 0-2 0-5 0-31 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N O-63 (5) 0-2 0-5 0-31 0-3 0-15 0-15 0-10 0-3 0-17 0-3 0-17 0-3	ReeDV K102C O	BMBS	- Kat 2 0 0 1 3 3 3 3 0 0 1 7 0 N N(Y) N N N Y V OSCIAR K438 0 0 2 5 7 7 3 3 3 3 12 4 2 4 8 2 4 8 5 12	SNLLY SNLL	SPALLY S	FRANK	N	DDWH Kidek O 1 1 5 5 8 8 3 3 2 11 1 0 0 3 3 3 4 5 N N N N N N N N N N N N N N N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 : 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER	0-63 (5) 0-2 0-5 0-31 0-35 0-15 0-63 0-7 Y/N Y/N Y/N 0-63 (5) 0-2 0-5 0-31 0-15 0-17 Y/N Y/N Y/N Y/N Y/N Y/N Y/N Y/N Y/N Y/N	N	BMBS Ki15 2 1 10 10 12 3 3 3 3 9 0 1 2 5 5 N N(Y) N N N N N N N N N	Control Cont	Naty	SALLY Ki21B 1 3(4) 5 8 10 6 8 10 10 10 10 10 10 10	FRANK K180 C C C C C C C C C	DIPON Kide 2 1 6 6 8 8 3 3 2 11 0 1 2 4 4 N N N N N N 1 1 0 3 5 5 5 1 3 3 3 1 1 3 3 3 1 1 1 3 3 3	DDWH Kidek O 1 1 5 5 8 8 3 3 2 11 1 0 0 3 3 3 4 5 N N N N N N N N N N N N N N N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 : 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE	0-63 (5) 0-2 0-5 0-31 0-15 0-17 Y/N Y/N Y/N Y/N 0-63 (5) 0-2 0-5 0-3 0-15 0-63 0-7 Y/N Y/N Y/N Y/N Y/N Y/N Y/N Y/N Y/N Y/N	Reventy R 102C 0	BMBS Ki15 2 1 10 10 10 11 3 3 3 3 9 0 1 2 5 3 N N(Y) N N OSCAR Color 1 2 4 4 4 4 4 1 4 1 4 1 4 1 4 1 4 1 4 1	- K61. 2 0 2 2 3 3 3 0 1 3 3 0 0 1 7 0 N N (Y) N N N Y V COSCAR K1438 0 0 0 2 5 7 3 3 3 3 12 4 2 4 6 2 N N N N N N N N N N N N N N N N N N	SNLLY SNLL	SMLLY Ki21B 1 3(4) 5 6 10 6 10 10 10 10 10	FEMEL N. 1 1 2 4 1 1 2 4 1 1 2 4 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 2 4 1 1 2 4 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 2 4 1 1 1 1	DIPON Kid6 2 1 6 6 8 8 3 3 2 11 0 12 9 9 N N N N N N 1 0 7 Ki115 1 0 0 3 5 5 5 1 3 3 0 6 0 1 1 9 1 8 3 0 N N N	DDWH Kidek O 1 1 5 5 8 8 3 3 2 11 1 0 0 3 3 3 4 5 N N N N N N N N N N N N N N N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 : 11 6 3 4 2 N N N
PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER SEAPLANE TORPEDO NIGHT ANTI-SUB PLANE & TYPE ROLE CREW RANGE (N,E,T) ALTIT (H,M,L) CRUISING SPEED BOMB LOAD CHAR (F,V,M,P) ALLIED CARRIER	0-63 (5) 0-2 0-5 0-31 0-35 0-15 0-63 0-7 Y/N Y/N Y/N 0-63 (5) 0-2 0-5 0-31 0-15 0-17 Y/N Y/N Y/N Y/N Y/N Y/N Y/N Y/N Y/N Y/N	Reverse	BMBS Ki15 2 1 10 10 11 12 13 3 3 3 9 0 1 2 5 3 1 12 15 13 14 14 14 14 14 14 14	- K61 2 0 2 2 3 3 0 1 3 0 0 1 7 0 N N(Y) N N Y	SNLY 1 3(4) 1 3(4) 5 8 10 1 3 3 9 8 2 1 2 1 2 1 N N N N N O 0 0 3 3 4 3 3 3 11 0 0 4 3 5 4 N N N N N N N N N N N N N N N N N N N	SALLY Ki21B 1 3(4) 5 6 10 0 0 0 0 0 0 0 0	Frame	N	DDWH Kidek O 1 1 5 5 8 8 3 3 2 11 1 0 0 3 3 3 4 5 N N N N N N N N N N N N N N N N N N	SONIA Ki51 1 1 4 4 6 1 3 3 10 2 2 2 2 5 1 N N N	PEGGY Ki67 1 4 5 9 1 2 3 1 11 6 3 4 2 N N N

Appendix D

Allied Aircraft

PLANE 8	0-63																														
TYPE	(5)	F	-39	90	P	-40	00	P	-39	H	P	-39	Q	F	-6:	3	В	-17	C	В	-17	E	В	-17	F	8	-17	2G	E	-29	9
ROLE	0-2		0			0			0			0			0			1			1			1			1			1	
CREW	0-5		0		T	0			0			0			0			5			5			5			5			5	
RANGE (N,E,T)	0-31	3	5	6 3		5	6	2	4	5	3	5	6	1	4	5	5	11	16	4	12	15	6	11	17	5	11	15	14	18	20
ALTIT (H,M,L)	0-3	2	3	3	2	3	3	3	3	3	3	3	3	3	3	2	3	3	2	3	3	2	3	3	2	3	3	2	2	3	2
CRUISING SPEED	0-15		11			11			13			12			15			10			9			10			8			10	
BOMB LOAD	0-63		2			2			2			2			2			35			27			27			32			63	
CHAR (F,V,M,P)	0-7	3	4 5	4	3	3 5	4	3	3 5	5	3	4 5	5	4	4 5	5	3	3 0	2	5	4 0	3	5	4 0	3	6	6	2	5	7 0	4
ALLIED	Y/N	Г	Y	N	T	Y			Y			Y			Y			Y			Y			Y			Y			Y	
CARRIER	Y/N	,	(Y))		N			N			н			н			N			N			N			н			N	
SEAPLANE	Y/N		N			N			N			н			н			N			н			H			N			N	
TORPEDO	Y/N		N			H			N			N			N			н			н			н			H			N	
NIGHT	Y/N		N			N			н			N		-	N			N			н			N			N			N	
ANTI-SUB	Y/N		H			N			H		-	H	1		N			N			N			N			N			N	

PLANE \$	0-63																		1								-				1
TYPE	(5)	F	2A-	3	P	BY-	4	PE	3Y-	5	P	845	A	В	-20	ID.	В	-24	J	P	B 4Y	2	E	3-3	2	F	作 -	1	P	-36	A
ROLE	0-2		0			2			2			2			1			1			2			1			0			0	
CREW	0-5		0			4			4			5			5			5			5	Y		4			1			0	
RANGE (N,E,T)	0-31	3	6	7	15	19	24	17	22	26	14	18	24	6	14	18	7	10	16	6	16	20	4	9	13	3	5	8	3	3	4
ALTIT (H,M,L)	0-3	2	3	3	0	3	3	0	1	3	0	3	3	2	3	2	1	3	2	0	2	3	2	3	2	3	3	2	2	3	3
CRUISING SPEED	0-15		7			5			5			5			9			9			7			13			8			12	
BOMB LOAD	0-63		1			7			14			7			43			43			43			63		0	4			0	
CHAR (F,V,M,P)	0-7	4	3 5	3	2	2 0	0	3 2	2 0	0	3	2 0	0	5	5 (2	6	5 (2	5	3 0	1	5	5 (0 4	7	6 5	6	3	2 6	2
ALLIED	YN		Y			Y			Y			Y			Y			Y	8		Y			Y			Y	18		Y	
CARRIER	Y/N		Y			н			H			ř			н			н			н			Y			н		1	1(Y	,
SEAPLANE	Y/N		N			Y			Y			Y			H			N			H			H			N			N	
TORPEDO	YN		н			H	N		Y			Y			H			H			N			Y			N			н	
NIGHT	Y/N		н			Y			Y			Y			H			H			Y		1	I(Y)		н			н	
ANTI-SUB	Y/N		н		H	(Y)		н	(Y))	1	1(Y))		н			н		1	N(Y)		н			н	313		н	

PLANE #	0-63																														
TYPE	(5)	S	80-	-5	T	BO	-1	1	F4F-	-3	F	4F-	-4	1	M-	2	F	6F-	3	F	6F-	5	TI	BF1	LC	TI	BM-	-3	н	UD3	A
ROLE	0-2		1			1			0			0			0			0			0	•		1			1			1	
CREW	0-5		1			2			0			0			0			0			0			2			2			3	
RANGE (N,E,T)	0-31	6	7	10	3	6	7	6	6	7	3	5	7	3	6	7	4	7	9	4	6	9	7	9	12	7	9	12	7	10	12
ALTIT (H,M,L)	0-3	0	3	3	0	2	3	3	3	2	2	3	2	2	3	2	3	3	3	3	-3	2	0	3	3	0	3	3	1	3	3
CRUISING SPEED	0-15		6			6			6			7			7			7			7			7			7			9	
BOMB LOAD	0-63		4			4			0			1			1			4			7			7			7			6	
CHAR (F,V,M,P)	0-7	3	4 4	1	1	3	3 0	4	4	5 3	5	4 5	3	5	4 5	5 3	5	5 5	4	5	5 5	4	2	4 4	1 1	4	4 4	1	2	3 3	1
ALLIED	Y/N		Y			Y			Y			Y			Y			Y			Y			Y			Y			Y	
CARRIER	Y/N		Y			Y			Y			Y			Y			Y			Y			Y			Y			н	
SEAPLANE	Y/N		H			H			н	1		н			N			N			H			H			H			н	
TORPEDO	Y/N		н			Y			H			N			н			N			H			Y			Y			H	
NIGHT	Y/N		н			н			N			N			N		1	1(Y)	1	(Y))		N			H	-	H	1(Y)	,
ANTI-SUB	Y/N		N			н			н			N			н			н			H			н			н		N	1(Y)	,

PLANE #	0-63																														
TYPE	(5)	P	-40	€	P	-40	F	P-	40	н	S	BC-	4	S	32C		SB	20	4	A	-20	С	A-	-26	8	A	-20	K	SE	BO-:	3
ROLE	0-2		0			0			0		1	1			1		1	1			1			1			1			1	
CREW	0-5		0	Y		0			0		-	1		X	1			1	0		2			2			2			1	
RANGE (N,E,T)	0-31	3	3	3	1	4	5	1	3	4	2	5	6	7	7	9	4	6	7	4	6	7	3	5	7	4	6	7	7	8	11
ALTIT (H,M,L)	0-3	1	3	3 3 2		3	2	3	3	3	1	3	3	0	3	3	1	3	3	0	3	3	0	3	3	0	3	3	1	3	3
CRUISING SPEED	0-15		12			13			13			6			7			7			11			12			11			7	
BOMB LOAD	0-63		0			2			2			4			4			7		V.	6			20			7			4	
CHAR (F,V,M,P)	0-7	5	4 6	3	5	4 6	4	5 4	6	4	1	1 5	0	4	4 4	2	4 4	4	2	3	4 3	3	5	4	3 4	4	4 3	3	2	4 4	1
ALLIED	Y/N		Y			Y			Y			Y			Y			Y			Y			Y			Y	35		Y	
CARRIER	Y/N	1	N(Y)	1	1(Y))		н			Y			Y			Y			H			N			н			Y	
SEAPLANE	Y/N		н			N			N	T.		н			н			н			N			н			н			н	
TORPEDO	Y/N		N			N			N			N			н			H			N			Н			H	9		N	
NIGHT	Y/N	3 0 5 4 6 3 1 Y 1 N(Y) 1 N		N			N	1		N			н			N			N			N			N			N			
ANTI-SUB	Y/N	0 5463 Y N(Y) N N		N			N			И			N			N		1	H			N			N			N			

PLANE #	0-63					20					Г						Г														
TYPE	(5)	P	-51	В	P	-51	D	P	-6:	LB	P	-47	В	P	-47	D	P	-47	N	F	4U-	1	F	40-	4	S	821	J3	6	1-3:	1
ROLE	0-2		0			0			0			0			0			0			0			0			1			1	
CREW	0-5		0			0			2			0			0			0			0			0			1			1	
RANGE (N,E,T)	0-31	3	4	5	3	6	7	4	9	10	2	2	3	1	3	4	3	7	9	3	6	8	3	5	7	7	8	10	3	4	6
ALTIT (H,M,L)	0-3	3	3	1	3	3	2	2	3	2	3	3	1	3	3	1	3	3	1	3	3	2	3	3	1	0	3	3	0	3	3
CRUISING SPEED	0-15		15			15			14			15			15			13			8		Г	9			7			10	
BOMB LOAD	0-63		4			4			22			0			2			7		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4			5							
CHAR (F,V,M,P)	0-7	4	5 6	6	5	5 6	6	5	4 4	4	5	4 6	6	5	5 6	6	5	5 6	7	5	5 6	5	5 5	6	6	2	3 5	1	2	3 5	ı
ALLIED	Y/N		Y			Y			Y			Y			Y			Y		Г	Y			Y			Y			Y	
CARRIER	Y/N		H			н			н			H			H			н		Y	(H)	,	Y	(H)			Y			н	
SEAPLANE	Y/N		н			H			H		-	N			H			N			N			N			н			N	
TORPEDO	Y/N		H			N			N			N			N			N			N			H			N			N	
NIGHT	Y/N		N			N			Y			N			N			N			н			H			N			N	
ANTI-SUB	Y/N		н			H			н			н			н			н			н			н			н			н	

PLANE \$	0-63							1																							
TYPE	(5)	P	-38	0	P	-38	н	P	-31	IJ		PV-:	L	В	-21	5B	В	-26	G	P	BM-	5	N	A-:	33		3-25	В	В	-25	Н
ROLE -	0-2		0			0			0			1			1			1			2			0			1			1	
CREW	0-5		0	1.		0			0			3			4			4			5			1			3			3	
RANGE (N,E,T)	0-31	2	3	5	1	4	6	2	6	12	7	10	13	3	5	8	3	5	9	10	16	20	4	4	4	3	5	7	6	8	9
ALTIT (H,M,L)	0-3	3	3	1	3	3	1	3	3	1	1	3	3	0	3	3	0	2	3	0	2	3	0	2	3	0	2	3	0	2	3
CRUISING SPEED	0-15		13			13			13			7			11			9			7	N.		7			11			10	
BOMB LOAD	0-63		7			11			11			10			16			18			27			0			18			10	
CHAR (F,V,M,P)	0-7	5	4 4	5	5	4 5	5	5	4	5 6	3	4 2	3	3	4	1 3	4	5 1	2	4	4 0	1	2	3 !	5 0	4	4	1 2	6	5 1	1
ALLIED	Y/N		Y			Y			Y			Y			Y			Y			Y			Y			Y			Y	
CARRIER	Y/N		н			N			н			н			N			H			н			н			N(Y)		H	
SEAPLANE	Y/N		н		1	N			H			N			N			н			Y			н			N			Н	
TORPEDO	Y/N	2 3 5 1 4 6 6 3 3 1 3 3 1 3 3 1 3 7 11 5 4 4 5 5 4 5 5 4 5 5 7 7 N N			N			N		1	I(Y)		N			N			Н			N(Y)		н					
NIGHT	Y/N		N			1			N			N																			
ANTI-SUB	Y/N		N			H	1		N		1	1(Y)			H			N			н			н			N			N	

PLANE 8	0-63																														
TYPE	(5)	E	E	1	BF	Т 1	T	BFF	R F	1	BF	R	6	н	08	В	H	os	F	3	MD	1	A	LBA	1	F	UL	1	Bé	¥RR	A
ROLE	0-2		1			1		(0			0			1			0			1			1			0			1	
CREW	0-5		2			3		:	1	1	1	(2)	,		1			1		1	(2))		2			1			2	
RANGE (N,E,T)	0-31	5	7	8	8	10 1	3	5	5	7	4	5	7	4	7	8	5	7	8	5	6	8	4	5	6	3	3	4	5	7	7
ALTIT (H,M,L)	0-3	0	3	3	0	2	3	1	3	3	0	1	3	3	3	1	2	3	3	0	1	3	0	3	3	1	3	3	0	2	3
CRUISING SPEED	0-15		10			6		1	.0			9			11			11			6			6	7		10			7	
BOMB LOAD	0-63		4			5	1	(D	1		2			14			4			5			7			0			6	
CHAR (F,V,M,P)	0-7	3	3 2	1	3	3 3	1	6 4	4	2	4	4 3	2	0	2 4	5	6	3 5	5	1	1 4	0	1	2 4	0	6	3 4	2	1	3 4	0
ALLIED	Y/N		Y			Y	1	,	Y	1		Y			Y			Y			Y			Y			Y			Y	
CARRIER	Y/N		N			N		1	ч	1		N			N			N			Y	N		Y	3		Y			Y	
SEAPLANE	Y/N		H			H		1	4	1		н			н			H			H			н			H			H	
TORPEDO	Y/N		N			Y	1	1	ч	1		Y			N			N	1		Y			Y			Н			Y	
NIGHT	Y/N		N			N		H(Y)			N		١	I(Y)	H	(Y)		N			N			N			N	8
ANTI-SUB	Y/N		N			N		1	N	1		N			N			N		1	(Y))		N			N			N	

PLANE #	0-63																×														
TYPE	(5)	F	LY	1	н	UR	2	1	EM	P	1	SUNE	0	S	PII	5	S	PIT	9	S	EA	3	,	Æ	L	W	IRR	Α	E	000	1
ROLE	0-2	(0(2	,		0			0			2			0			0			0			1		0	(1)		0	
CREW	0-5	Г	1			0			0			5			0			0			0			4			1			0	
RANGE (N,E,T)	0-31	3	6			3	5	3	5	6	10	18	22	1	2	3	1	3	4	2	3	5	7	10	12	2	3	4	6	6	9
ALTIT (H,M,L)	0-3	1	3	3	3	3	2	3	3	3	0	2	3	3	3	3	3	3	1	2	3	3	0	2	3	0	3	3	2	3	3
CRUISING SPEED	0-15		8			9			12			6			12			14			9			8			8			8	
BOMB LOAD	0-63		7			4			7			17			2			4			2			15			2			0	
CHAR (F,V,M,P)	0-7	4	3 5	3	4	3 5	3	4	4 5	6	5	4 0	0	5	4	4	6	4 6	5	5	4 5	3	3	4	1 0	2	2 4	0	5	3 5	3
ALLIED	Y/N	1	Y			Y			Y			Y			Y			Y			Y			Y			Y			Y	
CARRIER	Y/N		Y		1	1(Y	>		н			N		١	I(Y)		н			Y			н			н			H	
SEAPLANE	Y/N		N			N			H			Y	T.		N			H			N			И			Н			N	
TORPEDO	Y/N		н			N			N			N			N			Н			н			Y			H			N	
NIGHT	Y/N		N	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		н		1	н		-	н			N	*		N	100		Y			н	9		N				
ANTI-SUB	Y/N		N			N			Н			N			н			н			H			Y			N			N	

BIBLIOGRAPHY

AGAWA, HIROYUKI. The Reluctant Admiral. Yamamoto and the Imperial Navy. Kodansha, Tokyo, 1979.

ALDEN, JOHN D. The Fleet Submarine in the US Navy. Arms & Armour Press, London, 1979.

ANGELUCCI, ENZO. The Rand McNally Encyclopedia of Military Aircraft 1914-1980. The Military Press, New York, 1981.

BIRDSALL, STEVE. B-29 Superfortress in Action. Squadron/Signal, Carrollton, 1977. BIRDSALL, STEVE. B-26 Marauder in Action. Squadron/Signal, Carrollton, 1981.

BLAIR, CLAY JR. Silent Victory. J. B. Lippincott, Philadelphia, 1975.

CHESNEAU, ROGER. (ed.). All the World's Fighting Ships 1922-1946. Conway Maritime Press, London, 1980.

CHRISTY, JOE & JEFF ETHELL. P-40 Hawks at War. Ian Allan, London, 1979.

COLLIER, BASIL. Japanese Aircraft of World War II. Sidgwick & Jackson, London, 1979.

DAVIS, LARRY. *B-17 in Action*. Squadron/Signal, Carrollton,

DICKSON, W.D. The Battle of the Philippine Sea. Ian Allan, London, 1975.

D'OLIER, FRANKLIN (et al). Campaigns of the Pacific War. (United States Strategic Bombing Survey, Pacific, Naval Analysis Division). Greenwood Press, New York, 1969.

DULL, PAUL S. A Battle History of the Imperial Japanese Navy (1941-1945). Naval Institute Press, Annapolis, 1978.

DUNNIGAN, JAMES. (et al). War in the Pacific. Simulations Publications Inc, New York, 1977.

ESPOSITO, VINCENT J. (ed.). The West Point Atlas of the American Wars. Vol II 1900-1953. Praeger, New York, 1972.

FRANCILLION, RENE J. Japanese Carrier Air Groups 1941-1945. Osprey, London, 1979.

FRANCILLION, RENE J. US Navy Carrier Air Groups, Pacific

1941–1945. Osprey, London, 1978. FRANCILLION, RENE J. Japanese Aircraft of the Pacific War: Putnam, London, 1979.

FRANCILLION, RENE J. US Army Air Forces in the Pacific. Aero, Fallbrook, 1969.

FRIEDMAN, NORMAN. Naval Radar. Conway Maritime Press, London, 1981.

FRIEDMAN, NORMAN. Carrier Air Power. Conway Maritime Press, London, 1981.

FRIEDMAN, NORMAN. U.S. Destroyers. An Illustrated Design History. Arms & Armour Press, London, 1982.

FRIEDMAN, NORMAN. U.S. Aircraft Carriers. An Illustrated Design History. Arms & Armour Press, London, 1983.

FUCHIDA, MITSUO & MASATAKE OKUMIYA. Midway. Naval Institute Press, Annapolis, 1983.

GRIFFITH, SAMUEL B. *The Battle for Guadalcanal*. Nautical & Aviation, Annapolis, 1979.

GRIGSBY, GARY. Carrier Force. Strategic Simulations Inc, Mountain View, 1984.

GRIGSBY, GARY. Guadalcanal Campaign. Strategic Simulations Inc, Mountain View, 1982.

HESS, WILLIAM N. A-20 Boston at War. Ian Allan, Shepperton, 1979.

JENTSCHURA, HANSGEORG. (et al). Warships of the Imperial Japanese Navy 1869-1945. Arms & Armour Press, London, 1977.

JONES, LLOYD S. US Bombers. 1928-1980's. Aero, Fallbrook. 1980

LENTON, H.T. & J.J. COLLEDGE. Warships of World War II. Ian Allan, London, 1973.

MCDOWELL, ERNEST R. B-25 Mitchell in Action. Squadron/Signal, Carrollton, 1978.

MENDENHALL, CHARLES A. Deadly Duo. The B-25 and B-26 in World War II. Speciality Press, Osceola, 1981.

MESKO, JIM. A-20 Havoc in Action. Squadron/Signal, Carrollton, 1983.

MUNDAY, ERIC. USAAF Bomber Units, Pacific 1941-1945. Osprey, London, 1979.

MUNSON, KENNETH. American Aircraft of World War 2. Blandford, Poole, 1982.

NOHARA, SHIGERU. A6M Zero in Action. Squadron/Signal, Carrollton, 1983.

OKUMIYA, MASATAKE (et al). The Zero Fighter. Cassell, London, 1958.

ROSCOE, THEODORE. United States Destroyer Operations in World War II. Naval Institute Press, Annapolis, 1972. ROSCOE, THEODORE. United States Submarine Operations in World War II. Naval Institute Press, Annapolis, 1979.

SCARBOROUGH, W.E. PBY Catalina in Action. Squadron/Signal, Carrollton, 1983.

SCUTTS, JERRY. B-25 Mitchell at War. Ian Allan, Shepperton, 1983.

SILVERSTONE, PAUL H. US Warships of World War 2 Ian Allan, London, 1982.

STAFFORD, GENE B. P-38 Lightning in Action. Squadron/Signal, Carrollton, 1976.

STERN, ROBERT C. US Subs in Action. Squadron/Signal, Carrollton, 1979.

STERN, ROBERT C. SB2C Helldiver in Action. Squadron/Signal, Carrollton, 1982.

STERN, ROBERT C. SBD Dauntless in Action. Squadron/Signal, Carrollton, 1984.

SULLIVAN, JIM. F6F Hellcat in Action. Squadron/Signal, Carrollton, 1979.

SULLIVAN, JIM. F4U Corsair in Action. Squadron/Signal, Carrollton, 1977.

TAYLOR, S. CRAIG. (et al). Flat Top. Battleline Publications.

THORPE, DONALD W. Japanese Naval Air Force Camouflage and Markings World War II. Aero, Fallbrook, 1977.

THORPE, DONALD W. Japanese Army Air Force Camouflage and Markings World War II. Aero, Fallbrook, 1979.

TILLMAN, BARRETT. The Wildcat in World War II. Nautical & Aviation, 1983.

WATTS, A.J. Japanese Warships of World War II. Ian Allan, London, 1974.

WEAL, ELKE C. (et al). Combat Aircraft of World War Two. Arms & Armour Press, London, 1977.

WOODBURN KIRBY, S. (et al). The War Against Japan. (History of the Second World War, vol. 2). HMSO, London, 1958.

